

**IN THE MATTER OF AN INDEPENDENT REVIEW PROCESS
BEFORE THE INTERNATIONAL CENTRE FOR DISPUTE RESOLUTION**

**AFILIAS PLC
and
AFILIAS DOMAINS NO. 3 LIMITED,**

Claimants

v.

INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS,

Respondent

ICDR Case No. _____

EXHIBITS TO EXPERT REPORT OF JONATHAN ZITTRAIN

LIST OF EXHIBITS

Exhibit No.	Description
JZ-1	Jonathan Zittrain <i>Curriculum Vitae</i>
JZ-2	S. Hrg. 112-394, ICANN’s Expansion of Top Level Domains, Hearing before the Committee on Commerce, Science, and Transportation, U.S. Senate, 112 th Congress, First Session, December 8, 2011, <i>available at</i> https://www.gpo.gov/fdsys/pkg/CHRG-112shrg74251/html/CHRG-112shrg74251.htm
JZ-3	J.P.Morgan, <i>VeriSign (VRSN US): DoJ Clears Way for VRSN to Close .web Purchase</i> , January 10, 2018
JZ-4	Matthew Lasar, “Any lawful device: Revisiting Carterfone on the eve of the Net Neutrality vote”, <i>Ars Technica</i> , December 13, 2017, <i>available at</i> https://arstechnica.com/tech-policy/2017/12/carterfone-40-years/
JZ-5	Cricket Liu and Paul Albitz, <i>DNS and BIND</i> (5th ed. 2006)
JZ-6	Keith Shaw, “What is DNS and how does it work?”, <i>Network World</i> , April 11, 2018, <i>available at</i> https://www.networkworld.com/article/3268449/internet/what-is-dns-and-how-does-it-work.html
JZ-7	Jon Postel and J. Reynolds, Network Working Group, Request for Comments: 920, Domain Requirements, October 1984, <i>available at</i> https://tools.ietf.org/pdf/rfc920.pdf
JZ-8	Milton L. Mueller, <i>Ruling the Root: Internet Governance and the Taming of Cyberspace</i> (2006)
JZ-9	“Fallout over Unsanctioned DNS Test”, <i>Wired News Report</i> , May 2, 1999, <i>available at</i> https://www.wired.com/1998/02/fallout-over-unsanctioned-dns-test/
JZ-10	“The Internet: A peace of sorts”, <i>The Economist</i> , November 17, 2005, <i>available at</i> https://www.economist.com/node/5178973
JZ-11	Heather N. Mewes, “Memorandum of Understanding on the Generic Top-Level Domain Name Space of the Internet Domain Name System”, 13(1) <i>Berkeley Technology Law Journal</i> 235 (1998)
JZ-12	ICANN, Cooperative Agreement between NSI and U.S. Government, Agreement No. NCR-9218742, January 1, 1993, <i>available at</i> https://archive.icann.org/en/nsi/coopagmt-01jan93.htm

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JZ-13	Craig Simon, The Technical Construction of Globalism: Internet Governance and the DNS Crisis, A case study for <i>Bandwidth Rules</i> , October 1998, available at https://web.archive.org/web/20000815211830/http://www.flywheel.com/ircw/dnsdraft.html
JZ-14	ICANN's Early Days, <i>ICANN History Project</i> , available at https://www.icann.org/en/history/early-days
JZ-15	David S. Hilzenrath, "Network Solutions Dropped as Registrar of Internet Domains", <i>The Washington Post</i> , April 24, 1997, available at https://www.washingtonpost.com/archive/business/1997/04/24/network-solutions-dropped-as-registrar-of-internet-domains/dafcf9ef-e875-4d68-83b1-232823d8aadf/?utm_term=.a645a444e70a
JZ-16	"VeriSign buys Network Solutions in \$21 billion deal", <i>CNet</i> , January 2, 2002, available at https://www.cnet.com/news/verisign-buys-network-solutions-in-21-billion-deal/
JZ-17	Postel Note, September 15, 1995, available at https://web.archive.org/web/20020624231348/https://wia.org/pub/postel-iana-draft13.htm
JZ-18	Postel Priorities, July 3, 1996, available at https://web.archive.org/web/19970227141952/Http://www.iiia.org/lists/newdom/current/0233.html
JZ-19	Jon Postel, New Registries and the Delegation of International Top Level Domains, June 1996, available at https://tools.ietf.org/html/draft-postel-iana-itld-admin-01
JZ-20	GoDaddy, <i>Domain Help: What is the difference between a registry, registrar and registrant?</i> , available at https://www.godaddy.com/help/what-is-the-difference-between-a-registry-registrar-and-registrant-8039
JZ-21	Domain Names, <i>gTLD-MoU</i> , available at https://cs.stanford.edu/people/eroberts/cs201/projects/1997-98/domain-names/proposals/gtldmou.html
JZ-22	Peyman Pejman, "NSF is tired of the name game", <i>GCN</i> , October 20, 1997, available at https://gcn.com/articles/1997/10/20/nsf-is-tired-of-the-name-game.aspx
JZ-23	"NSF bows out of domain names", <i>CNet</i> , April 23, 1997, available at https://www.cnet.com/news/nsf-bows-out-of-domain-names/
JZ-24	Senki, ICANN History – Transcript of an open meeting, APRICOT 98, Manila, Philippines (Part One), February 17, 1998, available at http://www.senki.org/icann-history-apricot-98-part-1/

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JZ-25	NTIA, Registration and Administration of Internet Domain Names -- Summary of Comments [Docket No. 97061337-7137-01], August 18, 1997, <i>available at</i> https://www.ntia.doc.gov/other-publication/1997/registration-and-administration-internet-domain-names-summary-comments-docket
JZ-26	NTIA, Improvement of Technical Management of Internet Names and Addresses; Proposed Rule [Docket No. 980212036-8036-01], February 20, 1998, <i>available at</i> https://www.ntia.doc.gov/federal-register-notice/1998/improvement-technical-management-internet-names-and-addresses-proposed-
JZ-27	NTIA, Statement of Policy on the Management of Internet Names and Addresses [Docket No. 980212036-8146.02], June 5, 1998, <i>available at</i> https://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses
JZ-28	"New Internet Government Forged", <i>Wired</i> , September 17, 1998, <i>available at</i> https://www.wired.com/1998/09/new-internet-government-forged/
JZ-29	ICANN, Memorandum of Understanding between the U.S. Department of Commerce and Internet Corporation for Assigned Names and Numbers, November 25, 1998, <i>available at</i> https://www.icann.org/resources/unthemed-pages/icann-mou-1998-11-25-en
JZ-30	ICANN, Transition Agreement between University of Southern California and Internet Corporation for Assigned Names and Numbers, February 25, 2012, <i>available at</i> https://www.icann.org/resources/unthemed-pages/usc-icann-transition-2012-02-25-en
JZ-31	ICANN, Esther Dyson's Response to Ralph Nader's Questions, June 15, 1999, <i>available at</i> https://www.icann.org/resources/unthemed-pages/dyson-response-to-nader-1999-06-15-en
JZ-32	ICANN, Registry Agreement between Internet Corporation for Assigned Names and Numbers and Network Solutions, Inc., November 10, 1999, <i>available at</i> https://archive.icann.org/en/nsi/nsi-registry-agreement-04nov99.htm
JZ-33	Prepared Testimony of Esther Dyson (Interim Chairman of the Board of Directors, ICANN), U.S. House of Representatives, Committee on Commerce, Subcommittee on Oversight and Investigations, July 22, 1999, <i>available at</i> https://www.icann.org/resources/unthemed-pages/dyson-testimony-1999-07-22-en
JZ-34	ICANN, ICANN Yokohama Meeting Topic: Introduction of New Top-Level Domains, June 13, 2000, <i>available at</i> https://archive.icann.org/en/meetings/yokohama/new-tld-topic.htm

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JZ-35	ICANN, Report (Part One) of Working Group C (New gTLDs) Presented to Names Council, March 21, 2000, <i>available at</i> https://archive.icann.org/en/dnso/wgc-report-21mar00.htm
JZ-36	ICANN, <i>Groups</i> , February 6, 2012, <i>available at</i> https://www.icann.org/resources/pages/groups-2012-02-06-en
JZ-37	DNSO Names Council Statement on new gTLDs, April 19, 2000, <i>available at</i> http://www.dnso.org/dnso/notes/20000419.NCglds-statement.html
JZ-38	ICANN, Criteria for Assessing TLD Proposals, August 15, 2000, <i>available at</i> https://archive.icann.org/en/tlds/tld-criteria-15aug00.htm
JZ-39	ICANN, TLD Applications Lodged, October 2, 2000 (corrected through October 10, 2000), <i>available at</i> https://archive.icann.org/en/tlds/tld-applications-lodged-02oct00.htm
JZ-40	ICANN, Report on TLD Applications: Application of the August 15 Criteria to Each Category or Group, November 9, 2000, <i>available at</i> https://archive.icann.org/en/tlds/report/report-iiib1a-09nov00.htm
JZ-41	ICANN, <i>Announcements: ICANN Announces Selections for New Top-Level Domains</i> , November 16, 2000, <i>available at</i> https://www.icann.org/news/icann-pr-2000-11-16-en
JZ-42	CERN, <i>Topic: The birth of the web</i> , <i>available at</i> https://home.cern/topics/birth-web
JZ-43	ICANN, <i>Forum: Why IOD? Over 20,025 Reasons Why</i> , October 30, 2000, <i>available at</i> https://forum.icann.org/tldapps/39FDEC9100000D1C.html
JZ-44	ICANN, New gTLD Application Submitted to ICANN by Web.com Group, Inc., Application ID: 1-1009-97005, June 13, 2012
JZ-45	ICANN Board Rationales for the Approval of the Launch of the New gTLD Program, June 21, 2011
JZ-46	ICANN, <i>Rationale for Board Decision on Economic Studies Associated with the New gTLD Program</i> , March 21, 2011, <i>available at</i> https://www.icann.org/en/system/files/bm/rationale-economic-studies-21mar11-en.pdf
JZ-47	Dennis Carlton (Compass Lexecon), Report regarding ICANN's Proposed Mechanism for Introducing New gTLDs, June 5, 2009, <i>available at</i> https://archive.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09-en.pdf
JZ-48	Verisign, Fourth Quarter 2017 Domain Report, <i>The Domain Name Industry Brief</i> , Vol. 15, Issue 1, February 2018

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JZ-49	Patrick Thibodeau, “.com gets company; controversy flares”, <i>Computer World</i> , November 20, 2000, <i>available at</i> https://www.computerworld.com/article/2589104/enterprise-applications/-com-gets-company---controversy-flares.html

EXHIBIT JZ-1

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 Cambridge, MA, USA 02138
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EMPLOYMENT	<p>Harvard University 2000-present George Bemis Professor of International Law (2008-present); Assistant Professor (2000-05); Visiting Professor (2006-2007). Professor of Computer Science, School of Engineering and Applied Sciences (2010-present). Member of Faculty, Kennedy School of Government (2008-present). Vice Dean for Library and Information Resources, Harvard Law School Library (2012-present). Representative courses taught: Internet & Society: The Technologies & Politics of Control; Torts; Counsel to the Internet Client. Projects include design of in-class and asynchronous teaching tools; testing of Internet filtering by governments worldwide; production of distributed computing platforms to assist in the detection and prevention of malware; and co-creation of site to accrue reports of Web takedowns under legal threat.</p> <p>Berkman Klein Center for Internet and Society 1996-present Co-Founder and Faculty Director of the Harvard Law School Berkman Klein Center for Internet & Society; Lecturer on Law, HLS; Adjunct Lecturer on Public Policy, John F. Kennedy School of Government (Spring 2000; Dean's Teaching Award). Representative courses taught: Internet & Society; The High-Tech Entrepreneur; The Microsoft Case, <cyber.law.harvard.edu/msdoj>; The Laws of Cyberspace: Social Protocols (w/Larry Lessig).</p> <p>Federal Communications Commission 2011-2014 Distinguished Scholar in Residence (2011); Chair, Open Internet Advisory Committee (2012-2014).</p> <p>University of Oxford 2005-2008 Professor of Internet Governance and Regulation (University Chair). Director of Graduate Studies, Oxford Internet Institute, 2005-2007. Visiting Professor of Law, Stanford Law School, Fall 2007. Jack N. and Lillian R. Berkman Visiting Professor for Entrepreneurial Legal Studies, Harvard Law School, Winters 2006-2007.</p> <p>The Hon. Stephen F. Williams U.S. Court of Appeals for the D.C. Circuit 1995-96 One-year judicial clerkship. Issues included separation of powers, the First Amendment (defamation, government regulation), and judicial review of agency action.</p> <p>U.S. Senate Select Committee on Intelligence 1992, 1994 Contributed to staff oversight of the U.S. intelligence community and its budget. Work included review of tactical military and national foreign intelligence policies and programs. Assisted staff investigation of the CIA over the Aldrich Ames case. TS/SCI clearance.</p> <p>U.S. Department of Justice Summer 1993 Contributed to briefs by the Appellate Staff of the Civil Division. Issues included whether electronic mail is a Federal record subject to FOIA (Armstrong v. Exec. Office of the President), and the constitutionality of a ban on honoraria for Federal employees (N.T.E.U. v. U.S.).</p> <p>U.S. Department of State 1991 Reported on crisis readiness at U.S. posts abroad from Quito, Ecuador, and Washington, D.C.</p> <p>Microsoft Corporation Summer 1990 Liaison between programming and marketing teams of Excel program group.</p> <p>Allegheny County Bar Association 1987-90 Created and developed "Allegheny Lawyers Online," a major non-profit electronic information service for legal professionals in the greater Pittsburgh area.</p> <p>Northwestern University Institute for the Learning Sciences Summer 1989 Helped design and code artificial intelligence counter-planning model against international terrorism.</p>
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CompuServe Information Service	1984-2004
Forum Administrator of the Forum Administrators' Forum on the 2,000,000-member CompuServe network.	
Computer Shopper Editorial Columnist	1986-1990

EDUCATION**Harvard Law School**

J.D. *magna cum laude*, June 1995
 Winner, Williston Contracts Competition, 1991
 Advocate & board member, Battered Women's Advocacy Project

Harvard University John F. Kennedy School of Government

M.P.A. Science, Technology, and Public Policy, June 1995

Yale University

B.S. *summa cum laude*, June 1991; *Phi Beta Kappa*
 Special Divisional Major: Cognitive Science and Artificial Intelligence
 Integrated work in computer science, political psychology, neuroscience and philosophy
 Theses: "A Computer Model of Strategic Issues Faced by Political Candidates"
 "A Case-Based Counterplanner in the Domain of International Terrorism"
 Speaker of the House, Yale Political Union; Editorial columnist, *Yale Daily News*

BAR MEMBERSHIP

Pennsylvania, District of Columbia, Massachusetts

U.S. Supreme Court and U.S. Courts for the District of Columbia District & Circuit, First Circuit, and Massachusetts District

PATENTS

U.S. # 6,998,984 and U.S. # 7,324,000 (state adaptation devices and methods for wireless communications);

U.S. # 7,107,311 (a system for facilitating communications over a network among participants and a moderator)

ADVISORY BOARDS & AFFILIATIONS

Council on Foreign Relations (permanent member); World Economic Forum (Forum Fellow, 2000-present; Global Leader for Tomorrow, 2000); iCommons (Creative Commons International) (board member, 2005-2009); Internet Society (trustee, 2009-2012); Scientific American (advisory board, 2009-present); National Security Agency Advisory Board—Compliance and Commercial Technology panels (advisory board member, 2010-present); Electronic Frontier Foundation (board member, 2011-present); Open Internet Advisory Committee (FCC) (Chair, 2012-2014).

**PUBLIC
TESTIMONY**

U.K. House of Lords, Select Committee on Science and Technology, October 2006.

U.S. Department of Homeland Security Privacy Advisory Board, Cambridge, MA,
June 15, 2005.

"The Role of Scientific and Technical Data and Information in the Public Domain: New Legal Approaches in the Private Sector," in *The Role of Scientific and Technical Data and Information in the Public Domain: Proceedings of a Symposium* (169-174), National Research Council, National Academy of Sciences, 2003.

Testimony before the Copyright Arbitration Royalty Panel, United States Copyright Office, Library of Congress, "In the Matter of: Digital Performance Right in Sound Recordings and Ephemeral Recordings," August 2001. Supplemental testimony, October, 2001.

"The Internet and Federal Courts: Issues and Obstacles," Testimony before the U.S. House of Representatives, Subcommittee on Courts and Intellectual Property, Committee on the Judiciary, June 29, 2000.

Testimony before the U.S. Senate, Committee on Commerce, Science, and Transportation, on S. 2255, a proposed extension of the Internet Tax Freedom Act, April 12, 2000.



"Domain Name System Privatization: Is ICANN Out of Control?," Testimony before the U.S. House of Representatives, Subcommittee on Investigations and Oversight, Committee on Commerce, July 22, 1999.

BOOKS

Access Contested: Security, Identity, and Resistance in Asian Cyberspace, with Ron Deibert, John Palfrey, and Rafal Rohozinski (MIT Press, 2011).

Access Controlled: The Shaping of Power, Rights, and Rule in Cyberspace, with Ron Deibert, John Palfrey, and Rafal Rohozinski (MIT Press, 2010).

The Future of the Internet – And How to Stop It (Yale U. Press and Penguin UK, 2008).

Access Denied: The Practice and Policy of Global Internet Filtering, with Ron Deibert, John Palfrey, and Rafal Rohozinski (MIT Press, 2008).

Internet Law, with Charles Nesson, Larry Lessig, Terry Fisher, and Yochai Benkler (Foundation Press, forthcoming 2009). Authored *Technological Complements to Copyright* (2005); *Jurisdiction* (2005).

The Torts Game: Defending Mean Joe Greene (Aspen Publishing 2005).

**SHORTER
WORKS**

Forthcoming: "Journalism After Snowden: The Future of the Free Press in the Surveillance State," Columbia University Press (postscript, 2016).

"Perfect Enforcement on Tomorrow's Internet" in *Regulating Technologies* (Roger Brownsword & Karen Yeung eds., Hart Publishing (UK), 2008).

"The Role of Scientific and Technical Data and Information in the Public Domain: New Legal Approaches in the Private Sector" in *The Role of Scientific and Technical Data and Information in the Public Domain: Proceedings of a Symposium* 169 (National Research Council, National Academy of Sciences, 2003).

"Be Careful What You Ask For: Reconciling a Global Internet and Local Law" in *Who Rules the Net?* (Cato Institute, 2003).

"Taming the Consumer's Computer" in *Policy Matters* (AEI-Brookings Joint Center for Regulatory Studies, 2002).



"ICANN: Between the Public and the Private" in *The Best in E-Commerce Law* (Warren Agin ed., Bowne & Co., 2001).

**PERIODICAL
PUBLICATIONS**

"Mass Hacks of Private Email Aren't Whistleblowing, They are at Odds With It," *Just Security*, Oct. 19, 2016.

"A Grand Bargain to Make Tech Companies Trustworthy?" with Jack Balkin, *The Atlantic*, Oct. 2016.

"The Good News and the Troubling News: We're Not Going Dark," *Lawfare*, Feb. 1, 2016.

"A Few Keystrokes Could Solve the Crime. Would You Press Enter?," *Just Security*, Jan. 12, 2016.

"Reflections on Internet Culture," *Journal of Visual Culture*, Dec. 2014.

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PUBLICATIONS
(Cont'd.)**

- "The Case for Kill Switches in Military Weaponry," *Scientific American Forum*, Sept. 3, 2014
- "Why Libraries [Still] Matter," Medium, Sept. 10, 2014.
- "Facebook Could Decide an Election Without Anyone Ever Finding Out: The scary future of digital Gerrymandering—and how to prevent it," *New Republic*, June 1, 2014.
- "Engineering an Election," *Harvard Law Review Forum*, June 2014.
- "Did Steve Jobs Favor or Oppose Internet Freedom?" *Scientific American*, Dec. 2011.
- "Better Data for a Better Internet," with John Palfrey, 334 *Science* 1210 (2011).
- "Response to Duncan Hollis, An E-SOS for Cyberspace," *Second Harvard International Law Journal/Opinion Juris Symposium*, July 13, 2011.
- "Freedom and Anonymity: Keeping the Internet Open," *Scientific American*, March 2011, at 13.
- "Will the U.S. get an Internet 'kill switch'?" with Molly Sauter, *MIT Tech Review*, March 4, 2011.
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- "The Fourth Quadrant," 78 *Fordham Law Review* 2767 (2010).
- "The Internet and Press Freedom," 45 *Harv. Civ. Rts. - Civ. Liberties L. Review* 565 (2010).
- "Book Review," 460 *Nature* 575 (2009) (book review).
- "Google's Cloud: How to Cope with the Disappearance of the PC," *Newsweek*, July 9, 2009.
- "Law and Technology: The End of the Generative Internet," 52 *Communications of the ACM* 18 (2009).
- "How to end the copyright wars," 457 *Nature* 264 (2009) (reviewing Lawrence Lessig, *Penguin, Remix: Making Art and Commerce Thrive in the Hybrid Economy* (2008)).
- "Web Tactics," with Robert Faris, 38 *Index on Censorship* 90 (2009).
- "The Internet is Closing to Innovation," *Newsweek*, December 8, 2008.
- "The End is Near: The Future of the Net Probably Won't Be As Bright As We Think," *Playboy*, June 2008.
- "Spam Works: Evidence from Stock Touts and Corresponding Market Activity," with Laura Frieder, 30 *Hastings Communications & Entertainment Law Journal (Comm/Ent)* 479 (2008).
- "The Web's Dark Energy," *Technology Review*, Vol. 111 Issue 4, July 2008.
- "Privacy 2.0," 2008 *University of Chicago Legal Forum* 65 (2008).
- "Ubiquitous Human Computing," 366 *Philosophical Transactions of the Royal Society* 3813 (2008).
- "Saving the Internet," *Harvard Business Review*, June 2007, at 49.
- "A History of Online Gatekeeping," 19 *Harvard Journal of Law and Technology* 253 (2006).
- "The Generative Internet," 119 *Harvard Law Review* 1975 (2006).
- "Normative Principles for the Evaluation of Free and Proprietary Software," 71, No. 1 *University of Chicago Law Review* (2004).
- "The End of Hide and Seek," *CIO Magazine*, Fall/Winter.
- "The Copyright Cage," *Legal Affairs*, July/August 2003, at 26.
- "Internet Filtering in China," with Ben Edelman, *IEEE Internet Computing*, March/April 2003, at 70.
- "Internet Points of Control," 44 *Boston College Law Review* 653 (2003).
- "Can the Internet Survive Filtering," *CNET*, July 2002.
- "Beware the Cybercops," *Forbes*, July 8, 2002.
- "Policy Matters," 2 *AEI-Brookings Joint Center for Regulatory Studies* 10 (2002).
- "Too Much of a Good Thing," *World Economic Forum Worldlink*, January/February 2002.
- "What's in a Name?" 55 *Federal Communications Law Journal* 153 (2002) (reviewing Milton L. Mueller, *The MIT Press, Ruling the Root: Internet Governance and the Taming of Cyberspace* (2002)).

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PUBLICATIONS
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- "Welcome to Second Class," CIO Magazine, March 2001.
- "Balancing Control and Anarchy on the Internet," *The Chronicle of Higher Education*, October 13, 2000.
- "Lost in a Cyber Campus," *World Economic Forum Worldlink*, May/June 2000.
- "How to Think About the Net Sales Tax Quandry," *The New Republic Online*, May 4, 2000.
- "Privaticating Privacy: Reflections on Henry Greely's Commentary," *52 Stanford Law Review* 1595 (2000).
- "Panel Discussion: Policing Obscenity and Pornography in an Online World," with Anne Beeson, 8 *William & Mary Bill of Rights Journal* 693 (2000).
- "What the Publisher Can Teach the Patient: Intellectual Property and Privacy in an Era of Trusted Privication," *52 Stanford Law Review* 1201 (2000).
- "Evaluating the Costs and Benefits of Taxing Internet Commerce," with Austan Goolsbee. *52 National Tax Journal* 413 (1999).
-  "ICANN: Between the Public and the Private," *Berkeley Technology Law Journal*, 1999, at 1071.
- "Digital Crime: Policing the Cybernation," 10, No. 2 *European Journal of International Law* (1999) (reviewing Neil Barrett, Kogan Page, *Digital Crime: Policing the Cybernation* (1997)).
- "The Un-Microsoft Un-Remedy: Law Can Prevent the Problem That It Can't Patch Later," *Connecticut Law Review*, 1999, at 1361.

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- "Apple's Emoji Gun Control," *The New York Times*, August 16, 2016, Opinion Pages.
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- "Encourage More Hackathons," *The New York Times*, June 15, 2011, Room for Debate.
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- "Let Consumers See What's Happening," *The New York Times*, December 2, 2011, Room for Debate.
- "Who watched my cheese?" *livemint.com*, *Wall Street Journal*, December 30, 2010.
- "An Impenetrable Web of Fees (part of "Who Gets Priority on the Web?")," *New York Times*, Aug. 10, 2010, Room for Debate.
- "A Fight Over Freedom at Apple's Core," *Financial Times*, Feb. 3, 2010, (Op-Ed).
- "Lost in the Cloud," *The New York Times*, July 19, 2009, (Op-Ed).
- "Facebook Rules," *The New York Times*, Feb. 18, 2009, Room for Debate Blog.
- "A Simple Way to Avoid Being the Next Star Wars Kid," *The Sunday Times*, May 4, 2008.
- "Companies Need Guidance to Face Censors Abroad," with John Palfrey, *CNET*, August 14, 2007.
- "Deploying the Wisdom of the Crowds Against Badware," with John Palfrey, *CNET*, July 29, 2006.
- "Reactions to the Supreme Court's decision in *Eldred v. Ashcroft*," *Washington Post*, January 16, 2003.
- "Calling Off the Copyright War," *Boston Globe*, November 24, 2002.
- "The Friendly Little Computer that Could," *New York Times*, March 18, 2002.
- "Taming the Consumer's Computer," *New York Times*, March 11, 2002.

- WORKING PAPERS**
- "A Mutual Aid Treaty for the Internet," *Future of the Constitution Series (Brookings)*, No. 8 (2011).
 - With Benjamin Edelman. *Documentation of Internet Filtering Worldwide* (2003).
 - With Benjamin Edelman. *Statement of Issues and Call for Data on Differential Google Filtering* (2003).
 - With Benjamin Edelman. *Software Application to Collect Filtering Data* (2003).
 - Empirical Analysis of Internet Filtering in China (2002).
 - "Evaluating the Costs and Benefits of Taxing Internet Commerce," *Social Science Research Network Working Paper Series* with Austan Goolsbee,(1999).
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- "Don't Panic: Making Progress on the 'Going Dark' Debate," with Matt Olsen, Bruce Schneier and others, The Berkman Center for Internet & Society at Harvard University (2016)
 - "Algorithmic Allegories," with Marcus Comiter and Ben Sobel, Harvard Law School Case Studies (2015).
 - "Internet Monitor 2014: Reflections on the Digital World", The Berkman Center for Internet and Society at Harvard University (Urs Gasser & Jonathan Zittrain eds., 2014).
 - "From Sony to SOPA: The Technology-Content Divide", with John Palfrey, Kendra Albert & Lisa Brem, Harvard Law School Case Studies (2013).
 - "Open Internet Advisory Committee 2013 Annual Report", The Open Internet Advisory Committee Federal Communications Commission (co-author, 2013).
 - "Internet Monitor 2013: Reflections on the Digital World", The Berkman Center for Internet and Society at Harvard University (Urs Gasser & Jonathan Zittrain eds., 2013).
 - "Game Changers: Mobile Gaming Apps and Data Privacy", with Susan Crawford and Lisa Brem, Harvard Law School Case Studies (2012).
 - "The Smart Grid", with Sonia McNeil, Paul Kominers, and John Palfrey Harvard Law School Case Studies (2012).
 - "The WikiLeaks Incident: Background, Details, and Resources", with Alan Ezekiel and John Palfrey, Harvard Law School Case Studies (2012).
 - "Accountability and Transparency at ICANN: An Independent Review (Final Report)", with Urs Gasser, Herbert Burkert and John Palfrey, Berkman Center Research Publication No. 2010-13. (2010).
 - "Internet Filtering Series" with John G. Palfrey, Derek Baumbauer, Rafal Rohozinski, Ronald Deibert and Nart Villeneuve(2005).
 - "Survey of Usage of the .BIZ TLD" with Ben Edelman (2002).
- PRESENTATIONS**
- "The Future of the Library - And How to Stop It" (keynote), American Association of Law Libraries 2009 Annual Meeting and Conference, Washington, D.C (July 26, 2009).
 - "The Kindness of Strangers" at TEDGlobal 2009, Oxford, UK (July 22, 2009).
 - "Civic Technologies and the Future of the Internet" Panel/Presentation at SXSW Interactive, Austin, TX (March 14, 2009).
 - Speaker at CERT Technical Symposium, Carnegie Mellon University, Pittsburgh, PA (March 12, 2009).
 - Panelist for "Alternative Futures of the Internet: Fears and Optimism," at symposium hosted by American Academy of Arts and Sciences, Mountain View, CA (Feb. 28, 2009).
 - Cyberlaw Colloquium (commentator), American University Washington College of Law, Washington, D.C (November 7-8, 2008).



**PRESENTATIONS
(Cont'd.)**

- Discussion with Pentagon Joint Staff on Cybersecurity, Washington, D.C (November 6, 2008).
- "Is Success Killing the Internet?" debate at the New American Foundation, Washington, D.C (November 6, 2008).
- Panelist for session on Open Source and Commercial Software at "When Worlds Collide: Intellectual Property Law at the Interface Between Systems of Knowledge Creation," Fordham Law School, New York (October 31, 2008).
- Guest speaker at the Ford Foundation, New York (October 30, 2008).
- "The Internet and Copyright: Public Policies Collide" (panelist), New York City Bar Foundation, New York (October 29, 2008).
- Talk at the Monitor Group's 2nd annual "Access to Minds" gathering, Cambridge, MA (October 21, 2008).
- Talk at Air Force Institute of Technology, Dayton, OH (October 15, 2008).
- "Hot Topics Facing Voters in the Upcoming 2008 Presidential Election," (moderator) Zittrain Forums on Law and Public Policy, Pittsburgh, PA (October 14, 2008).
- "The Uncertain Internet: Core Net Values for the [TBD] Administration" (moderator), Harvard Law School (October 9, 2008).
- The Future of Communication Policy in the New Presidential Administration (Future of American Telecommunications)" panel at TPRC 2008, George Mason University School of Law, Arlington, VA (September 26-28, 2008).
- "The 'I' in IT: Individualism, Community and the Democracy of the Internet" (moderator), Global Creative Leadership Summit, New York (September 21, 2008).
- "The Future of the Internet" discussion at Linda Hall Library of Science, Engineering and Technology, Kansas City, MO (September 8, 2008).
- "The Future of the Internet- Towards Civic Technologies" presentation at the SeaChange Ideas Forum, Denver (August 27, 2008).
- "The Future of the Internet - And How to Stop It," Interview and book signing at CNET Networks News Event, San Francisco (August 5, 2008).
- "The Future of the Internet - And How to Stop it," Microsoft Research Visiting Speaker Series, Microsoft Corp (August 4, 2008).
- "The Future of the Internet - And How to Stop it," Harvard and Yale Clubs of Pittsburgh (June 19, 2008).
- The Colbert Report (June 17, 2008).
- The Future of the Internet - and How to Stop It, Washington Post Online Discussion (May 29, 2008).
- Presentation to ILO Institute, Boston (May 21, 2008).
- CIO Leadership Conference, Boston (May 18-20, 2008).
- "The Future of the Internet - And How to Stop It," Berkman@10 Conference, Harvard Law School (May 14-16, 2008).
- Charlie Rose (May 13, 2008).
- "The Future of the Internet - And How to Stop It," Stanford/San Francisco Book Launch (May 9, 2008).
- "The Future of the Internet - And How to Stop It," Oxford Book Launch, Gulbenkian Lecture Theatre (May 7, 2008).
- How Free Is Free?" seminar hosted by Norwegian Board of Technology and the Nobel Peace Center, Oslo, Norway (May 4, 2008).
- Int'l Press Freedom Day (keynote), European Journalism Centre, Maastricht, Netherlands (May 3, 2008).
- Web 2.0 Expo (keynote), San Francisco (April 24, 2008).
- "The Future of the Internet - And How to Stop It," London Book Party, Royal Society for the Encouragement of Arts, Manufactures and Commerce (April 24, 2008).

**PRESENTATIONS
(Cont'd.)**

- "The Future of the Internet and How to Stop It," Boston Book Party, Berkman Center for Internet and Society, Harvard University (April 18, 2008).
- "The Future of the Internet and How to Stop It," NY Book Party, Tribeca Grand (April 11, 2008).
- "Open Source & Proprietary Models of Innovation" (keynote), Washington University, St. Louis, MO (April 3-4, 2008).
- "The Future of the Internet and How to Stop It," Yale Law School Information Society Project, Yale (April 1, 2008).
- "The Future of the Internet and How to Stop It," talk to Social Sciences Department at Wesleyan (April 1, 2008).
- "The Future of the Internet and How to Stop It" LA Book Party at Hollywood Hill (March 28, 2008).
- "It's 2013: Do You Know Where Your News Is? Examining Scenarios For the Future" (moderator), Media Re:public Conference, USC Annenberg, LA (March 27-28, 2008).
- "The Future of the Internet and How to Stop It," Book Party at Google DC, Washington D.C (March 20, 2008).
- "The Future of the Internet and How to Stop It," Google/Stanford Conference, Palo Alto, CA (March 7-8, 2008).
- International Association of Privacy Professionals (keynote), Washington, D.C (March 9, 2006).
- European Intellectual Property Institutes Network (keynote), Windsor, UK (February 17, 2006).
- "Digital Ecosystems," World Economic Forum (February 28 - March 1, 2006).
- American Lawyer Media, 50th Anniversary Conference (keynote), New York (January 31, 2006).
- "Social Disruptive Production" (moderator), "A World Without Intellectual Property" (moderator), "Militating Global Risk" (panelist), World Economic Forum, Davos (January 28, 2006).
- "The Next Internet," Fletcher School of Law and Diplomacy, Tufts University (January 23, 2006).
- Internet Content Rating Association (keynote), London (December 14, 2005).
- All Parliamentary Internet Group (panelist), London (November 29, 2005).
- Ministerial e-Government Conference 2005 (keynote), Manchester, UK (November 24, 2005).
- The Rehnquist Court and the First Amendment (panelist), Washington University in St. Louis (November 18, 2005).
- Consumer Reports Webwatch (keynote), Washington, D.C (October 26, 2005).
- Law Faculty, University of Edinburgh (October 17, 2005).
- "Reactivism" (panelist), Budapest, Hungary (October 14, 2005).
- "State of Play" (panelist), New York Law School (October 8, 2005).
- Cybersafety (keynote), Oxford University (September 8, 2005).
- CIO 100 (keynote, moderator), San Diego (August 21-23, 2005).
- Delivering Information Services, Harvard Business School (July 28, 2005).
- National Environmental Information Exchange Network (keynote), Cambridge, MA (July 19, 2005).
- "The Future of the Internet - And How to Stop It," Harvard Law School Faculty Workshop (July 14, 2005).
- iCommons Summit (moderator) (June 24-26, 2005).
- Internet Law Program, Cambridge, MA (June 22-24, 2005).
- Supreme Judicial Court of Massachusetts Annual Workshop (keynote) (June 16, 2005).
- Internet Law Program, Turin, Italy (May 24-27, 2005).
- "The Struggle for Internet Governance: Searching for Common Ground" (panelist), Oxford Internet Institute (May 6, 2005).

**PRESENTATIONS
(Cont'd.)**

Oxford Discovery Programme (lecturer), Queen Mary 2 (May 28 - June 1, 2005).

"The Culture War" (moderator), The Connecticut Forum, Hartford, CT (April 22, 2005).

CSO Perspectives (keynote, moderator), Huntington Beach, CA (April 10-12, 2005).

Boston Audio Society (March 13, 2005).

"Homeland Security" (panelist), Purdue University (February 24, 2005).

"Privacy and Security" (keynote), Victoria, BC (February 10, 2005).

"Freedom vs. Control: Rights Management in the Digital Age" (keynote), American Society for Information Science & Technology, Cambridge (December 15, 2004).

Internet & Society 2004 (keynote), Harvard University (December 10, 2004).

Georgetown Law Center Faculty Workshop (November 19, 2004).

CIO: The Year Ahead (keynote, moderator), Scottsdale, AZ (November 7-9, 2004).

Penn-Temple-Wharton Colloquium, Philadelphia (November 5, 2004).

College of Healthcare Information Management Executives (keynote), San Diego (October 29, 2004).

Boston University Intellectual Property Colloquium (September 10, 2004).

"SCO Moot Court," O'Reilly Open Source Convention (July 26, 2004).

"SCO and the Challenge for Open Source" (panelist), USENIX '04 (June 28, 2004).

Policy Keynote at Eighth Annual Consumer Electronics Association CEO Summit (June 25, 2004).

Harvard Law School Internet Law Program 2004 (May 13-15, 2004).

2004 Midyear Conference (keynote), National Association of State Chief Information Officers (April 26, 2004).

"Regulation and Control of the Internet" (panelist), China's Digital Future, U.C. Berkeley Graduate School of Journalism (April 20, 2004).

CSO Perspectives (moderator) (April 18-20, 2004).

"Hacktivism: Between Crime and Activism" (panelist), Digital Cops in a Virtual Environment, Yale Law School (March 26-28, 2004).

Penn-Temple-Wharton Colloquium (November 7-8, 2003).

CIO Perspectives (moderator) (November 2-4, 2003).

Symposium on Intellectual Property, e-Commerce, and the Internet (presenter), Boston College Law School (October 18, 2003).

The Rule of Law and the Information Age: Reconciling Private Rights and Public Interest - Legal Approaches, Catholic University of America Law School (October 9, 2003).

Comparative Intellectual Property and Cyberlaw Symposium, University of Ottawa (October 3, 2003).

Personal Security vs. Personal Liberties (moderator), The Connecticut Forum (September 18, 2003).

World Economic Forum Intellectual Property Round Table (moderator) (September 16, 2003).

The Internet and Society, Internet Law Symposium, University of Denver College of Law (September 5, 2003).

Delivering Information Services, Harvard Business School (July 30, 2003).

Internet Law Program (June 30-July 6, 2003).

"Digital Rights Management," CIO Perspectives (April 29, 2003).

Regulatory Impediments to a Broadband World: Issues of Digital Rights and Spectrum Allocation, Harvard Business School Colloquium (April 25, 2003).

Internet Law Program (March 24-28, 2003).

PRESENTATIONS (Cont'd.)  **ICANN and Internet Governance, ICANN, ccTLD, and the Legacy Root: Domain Name Lawmaking and Governance in the New Millennium, Cardozo School of Law (March 17, 2003).**

An Evaluation of Movie Industry Strategies to Combat Internet Piracy ? Learning from the Music Industry?s Mistakes? (panelist), Copyright and Fair Use: Present and Future Prospects, Harvard Journal on Law and Technology Symposium (March 15, 2003).

The Distinguished Intellectual Property Lecture, Center for Law, Technology and the Arts, Case Western Reserve University (March 6, 2003).

Current Issues in Cyberlaw, Penn State University (February 6, 2003).

Peer-to-Peer Networking and the Future of Online Music Distribution (panelist), Cyberposium 2003, Harvard Business School (January 18, 2003).

University of Pennsylvania Legal Studies Workshop (November 8-9, 2002).

Copyright and Culture, MIT Communications Forum (Nov 6, 2002).

Practical Copyright Issues in the Digital Age (panelist), Suffolk University Law School (October 25, 2002).

"The Rule of Law and the Information Age: Reconciling Private Rights and Public Interest - Legal Approaches," Catholic University of America Law School (October 9, 2002).

CIO Perspectives, Corporate Ethics (moderator) (October 7, 2002).

"Responses by the Research and Education Communities in Preserving the Public Domain and Promoting Open Access: New Legal Approaches in the Private Sector," National Academy of Sciences, Symposium on the Role of Scientific and Technical Data and Information in the Public Domain (September 6, 2002).

Privacy in an Internet-driven World, *On Point*, WBUR (June 4, 2002).

The Distinguished Intellectual Property Lecture, Case Western Law School (March 6,

 **ICANN and WIPO at Work: Towards a Paradigm of International Telecommunications Governance? (commentator), Brooklyn Law School (March 1, 2002).**

Keynote, InfoSec World, Orlando, FL (February 25, 2002).

Balancing Civil Liberties and Public Safety in the Face of Terrorism (moderator), World Economic Forum Annual Meeting, New York (February 1, 2002).

"Privacy and Information Security," "September 11," Information Security Forum, Toronto (October 14, 2001).

"In the Matter of: Digital Performance in Sound Recordings and Ephemeral Recordings," Testimony Before the Copyright Arbitration Royalty Panel, United States Copyright Office, Library of Congress (August 24, 2001).

Harvard Law School Faculty Workshop Series (August 9, 2001).

Owner President Management, Harvard Business School (August 9, 2001).

MIT Media Lab Colloquium Series (August 1, 2001).

"The State of the Global Internet," Harvard Law School Worldwide Alumni Congress, Paris (June 26, 2001).

 **"Regulating the Internet: What do we need to know?" (keynote), International Communication Association 51st Annual Conference (May 25, 2001).**

Communication Research and Policy: History, Tactics, Strategy, Agenda (panelist), Ford Foundation Workshop (May 24, 2001).

The Challenges of Cyberwar for American Foreign Policy (moderator), 2001 Harvard Colloquium on International Affairs (May 5, 2001)..

"Health Privacy" (keynote) National Association of Attorneys General (April 23, 2001).

Health Privacy, National Association of Attorneys General (April 23, 2001).

The Ubiquitous Net, National Association of Attorneys General (April 23, 2001).

**PRESENTATIONS
(Cont'd.)**

- Is the Internet Good for Democracy? (moderator), Institute of Politics, JFK School of Government (April 19, 2001).
- Rights Management Systems for Privacy, MIT Research Program on Communications Policy (March 22, 2001).
- The Hague Conference on Private International Law's Proposed Convention on Jurisdiction and Foreign Judgments in Civil and Commercial Matters, Eleventh Conference on Computers, Freedom, and Privacy (March 8, 2001).
- Genetic Privacy: Legal and Ethical Frameworks (moderator), Harvard Health Caucus (February 27, 2001).
- Keynote, InfoSec World, Orlando (February 25, 2001).
- The deCSS Case, Massachusetts Institute of Technology (February 1, 2001).
- Napster, Suffolk Law School (January 31, 2001).
- "The Right to Privacy" (moderator), "www.taxingthe.net," "Tomorrow's Internet: Total Anarchy or Total Control?" "What Limits for Big Brother?", World Economic Forum Annual Meeting, Davos (January 24-30, 2001).
- Supplemental Testimony before Copyright Arbitration Royal Panel, United States Copyright Office, Library of Congress, "In the Matter of: Digital Performance Right in Sound Recordings and Ephemeral Recordings" (2001).
- "Pressing Technology Issues," Program for Newly Elected Members of Congress, Institute of Politics, John F. Kennedy School of Government (December 16, 2000).
- "The Kept Non-Profit," When Exempt Organizations Conduct Exempt Activities as Taxable Enterprises, Seminar on Emerging Issues in Philanthropy, Hauser Center for Nonprofit Organizations (Nov 30, 2000).
-  **Institutions in Cyberspace: ICANN as Metaphor (respondent), John F. Kennedy School of Government (November 29, 2000).**
- The Day the Music Died? Harvard's Policy on Napster and Its Siblings--Past, Present and Future (moderator) (November 15, 2000).
-  **New Generic Top-Level Domains" (moderator), ICANN Pressing Issues 2000, Los Angeles (November 12, 2000).**
- Technology and Development (moderator), eDevelopment: Enabling Communities to Shape Their Future (October 19, 2000).
- The New Redcoats, Old South Meeting House (October 19, 2000).
- The Private Internet, Institute of Politics, JFK School of Government (October 13, 2000).**
-  **A Day with the ICANN North-American Candidates (moderator), (October 2, 2000).**
- Valenti v. Lessig: The Future of Intellectual Property (moderator), (October 1, 2000).
- World Economic Forum Global Issues Group, London (September 28-29, 2000).
- "e-Democracy: Gradual Change or Revolution?" (moderator), Institute of Politics Forum, John F. Kennedy School of Government (September 20, 2000).
- "Privacy, Data Security, and HIPAA Compliance," The eHealth Colloquium (Aug. 24, 2000).
- The Internet and Federal Courts: Issues and Obstacles, Testimony before the United States House of Representatives, Subcommittee on Courts and Intellectual Property, Committee on the Judiciary (June 29, 2000).
- The Internet and Federal Courts: Issues and Obstacles, Testimony before the U.S. House of Representatives, Subcommittee on Courts and Intellectual Property, Committee on the Judiciary (June 29, 2000).
- Collaboration Among Competitors, Energy and e-Business Summit, Cambridge Energy Research Associates (June 27, 2000).
- Politics and the Net, John F. Kennedy School of Government, Institute of Politics, Harvard University (June 27, 2000).

**PRESENTATIONS
(Cont'd.)**

- The Internet, Macbeth, and You, International Festival of Arts and Ideas, New Haven (June 26, 2000).
- Building a Strategy for Industry (moderator), Fourth Annual Consumer Electronics CEO Summit (June 23, 2000).
- Recent Developments in Cyberlaw, Human Services, Technology, and the Law, Office of the General Counsel, Commonwealth of Pennsylvania (June 12, 2000).
- The Microsoft Remedy, *The Connection* with Christopher Lydon, WBUR 90.9 FM, Boston (June 8, 2000).
- The Right to Know: How Far Does It Go? (moderator), Third Biennial Harvard Conference on Internet and Society (June 1, 2000).
- How Paranoid Should We Be? (moderator), Third Biennial Harvard Conference on Internet & Society (June 1, 2000).
- Private Sheriffs, Faculty Workshop, Visions of Governance in the 21st Century Project, John F. Kennedy School of Government, Harvard University (May 24, 2000).
- Students as Colleagues and Critics: Basic Techniques for Online Collaboration, Faculty Workshop on the Use of Technology in Teaching and Learning, Harvard University (May 17, 2000).
- Responses to Questions for the Record on Testimony Before the United States Senate, Committee on Commerce, Science, and Transportation, on S.2255, a Proposed Extension of the Internet Tax Freedom Act (May 8, 2000).
- Barbed Wire on the Electronic Frontier: Private Sheriffs and Their Private Weapons, University of Pittsburgh School of Law (April 20, 2000).
- Testimony before the U.S. Senate, Committee on Commerce, Science, and Transportation, on S. 2255, a proposed extension of the Internet Tax Freedom Act (April 12, 2000).
- Law Enforcement, Competition, Consumer Protection, Privacy: Tensions on Tomorrow's Internet for the Attorneys General, National Association of Attorneys General, Washington, DC (March 23, 2000).
- The Year in Entertainment Litigation (moderator), Harvard Law School Annual Entertainment Law Conference (March 10, 2000).
- Pioneers on the Virtual Frontier: Asian Americans and the Internet (moderator), Sixth Annual National Asian American Conference on Law and Public Policy (March 4, 2000).
- A Tangled Web: Medical Information, Ethics, and the Internet (panelist), Harvard Medical School (March 2, 2000).
- Intellectual Property: Will Technology Kill It or Make It Stronger?, Signal or Noise: The Future of Music on the Net, Harvard Law School (February 25, 2000).
- Teaching With Technology, Harvard Law School Graduate Student Colloquium (February 17, 2000).
- Comments on Standards for Privacy of Individually Identifiable Health Information, U.S. Department of Health and Human Services (February 14, 2000).
- "What the Publisher Can Teach the Patient: Intellectual Property and Privacy in an Era of Trusted Privication," Cyberspace and Privacy: A New Legal Paradigm? Stanford Law Review symposium (February 7, 2000).
- "Ten Web Sites That Will Change the World," "The Internet: The Real Road Ahead," "The Business of Privacy," World Economic Forum Annual Meeting, Davos (January 27-31, 2000).
- "Tomorrow's Internet and Its Implications for Law & Law Enforcement," National Association of Attorneys General, Palo Alto (January 11, 2000).
- "The Impact of Technology on Law and Legal Culture" (panelist), American Association of Law Schools, Annual Meeting (January 6, 2000).
- "Online/In-class," Technology in Education Program, Harvard Graduate School of Education (December 6, 1999).
-  "Competition in Top-Level Domains" (moderator), ICANN & the Public Interest: Pressing Issues, Los Angeles (October 31, 1999).

PRESENTATIONS
(Cont'd.)

- "Towards Internet 2.0," European Network Conference, Hale & Dorr (October 25, 1999).
- "Evaluating the Costs and Benefits of Taxing Internet Commerce," International Tax Program, Harvard Law School (October 15, 1999).
- "Why Aren't Libraries at the Center of the Internet?" Digital Reference Conference 1999, Harvard Graduate School of Education (October 14, 1999).
- "IP & the Net," Boston College Law School, American Inns of Court (Oct. 13, 1999).
- "Institutional Designs for Internet Governance: The Story of ICANN," Technology Policy Research Conference, Alexandria, Virginia (September 27, 1999).
- "The Evolution of Law in Cyberspace," Catholic University of America, Columbus School of Law (September 27, 1999).
- "Proprietary and Open Domains" (keynote), American Research Libraries Directors' Summit, Keystone, Colorado (September 25, 1999).
- "The Administration of Justice in a Networked Environment" (keynote), Sixth Annual Court Technology Conference, National Center for State Courts, Los Angeles (September 14, 1999).
-  Responses to questions for the record, "Domain Name System Privatization: Is ICANN Out of Control?", Testimony before the United States House of Representatives, Subcommittee on Investigations and Oversight, Committee on Commerce (August 24, 1999).
- "How (Not) to Regulate the Internet" (panelist), Section on Administrative Law (August 6, 1999).
- "AOL & Microsoft: The War Over Instant Messaging," BBC World Service, World Business Report (August 5, 1999).
-  "Domain Name System Privatization: Is ICANN Out of Control?", Testimony before the U.S. House of Representatives, Subcommittee on Investigations and Oversight, Committee on Commerce (July 22, 1999).
- "Internet Governance," Program of Instruction for Lawyers, Harvard Law School (June 22, 1999).
- "Law, Code, and Kids," Newton Human Rights Commission (June 8, 1999).
- "The Limits of Intellectual Property Online," Los Angeles Intellectual Property Law Association (June 6, 1999).
- "Government Regulation of the Net," Pyramid Research (April 25, 1999).
- "Competition and the Deployment of Advanced Telecommunications Capability" (moderator), Harvard Law School (April 17, 1999).
- "Copyright on the Line: Blame It on Rio? Or Title 17?" (moderator), Computers, Freedom, & Privacy 1999, Washington, D.C (April 7, 1999).
- "United States v. Microsoft: What's the Remedy?" Connecticut Law Review Symposium, Hartford (March 26, 1999).
- "Your Digital Footprints," The Connection With Christopher Lydon, WBUR 90.9 FM radio, Boston (March 24, 1999).
- "Responding to Hate on the Internet: Filters and Free Speech," ADL Civil Rights Luncheon, Boston (March 24, 1999).
- "Filtering Pornography," Institute of Bill of Rights Law, College of William and Mary (March 19, 1999).
- "The Body Commerce," MCLE Computer & Telecommunications Law Institute (March 16, 1999).
- "Law in a Connected World," LawTech Conference keynote, Ottawa (February 11, 1999).
- "First Amendment Implications of Convergence," Fordham Intellectual Property Symposium, Media & Entertainment Law Journal (February 9, 1999).
-  "Representation in Cyberspace: Membership Options for the Internet Corporation for Assigned Names and Numbers (ICANN)" (moderator), Harvard Law School (January 23, 1999).

EXHIBIT JZ-2

[Senate Hearing 112-394]
[From the U.S. Government Publishing Office]

S. Hrg. 112-394

ICANN'S EXPANSION OF TOP LEVEL DOMAINS

HEARING

before the

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

DECEMBER 8, 2011

Printed for the use of the Committee on Commerce, Science, and
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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

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ICANN'S EXPANSION OF TOP LEVEL DOMAINS

THURSDAY, DECEMBER 8, 2011

U.S. Senate,
Committee on Commerce, Science, and Transportation,
Washington, DC.

The Committee met, pursuant to notice, at 10:48 a.m. in room SR-253, Russell Senate Office Building, Hon. Amy Klobuchar, presiding.

OPENING STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA

Senator Klobuchar. The Committee will come to order. We have all our witnesses here. Thank you very much. We're in a time crunch and I know that Senator Rockefeller's going to be joining us shortly, as well as some other Senators. But I wanted to get this going, in the interest of time, because we're going to have to end at 10 minutes to twelve o'clock.

This is a very important hearing and I wanted to first introduce our witnesses. We first have Ms. Fiona Alexander. She's the Associate Administrator for the Office of International Affairs in the National Telecommunications and Information Administration.

We also have Ms. Angela Williams. Ms. Williams is the General Counsel for the YMCA of the U.S.A. and is also speaking on behalf of the Not-for-Profit Operational Concerns Constituency.

We have Mr. Daniel Jaffe. Mr. Jaffe is an Executive Vice President for Government Relations for the Association of National Advertisers. He's also speaking on behalf of the Coalition for Responsible Internet Domain Oversight.

We also have Ms. Esther Dyson. Ms. Dyson was the Founding Chairman of the ICANN's board of directors. She served in that role from 1998 to 2000.

Then we also have with us Mr. Kurt Pritz. Mr. Pritz is Senior Vice President for Stakeholder Relations for the Internet Corporation for Assigned Names and Numbers, also known as ICANN.

Do you want to begin? Each witness has 5 minutes, and we will start with Ms. Alexander.

STATEMENT OF FIONA M. ALEXANDER, ASSOCIATE
ADMINISTRATOR, OFFICE OF INTERNATIONAL AFFAIRS
NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Ms. Alexander. Good morning, Senator Klobuchar. I appreciate the opportunity to talk to you today on behalf of NTIA regarding ICANN's planned expansion of the Internet's domain name system through the introduction of new generic top-level domains, or new gTLDs.

Since its inception in 1998, ICANN has been charged with promoting competition in the registration of domain names while ensuring the security and stability of the DNS. In 2000 and 2003, ICANN conducted a limited expansion of gTLDs. In 2005 it initiated the process we are discussing today. After 6 years of multi-stakeholder discussion, including input from governments through the governmental advisory committee, ICANN approved the rules for the new gTLD program in the form of an applicant guidebook.

Expansion of the gTLD space is expected to provide a platform for city, geographic, and internationalized domain names, among other things. This type of change to the DNS is expected to enhance consumer trust and choice and reinforce the global nature of the Internet. It is also expected that a portion of applications will either be generic words or brand-focused as part of business development, investment, and startup plans.

Within ICANN, the GAC provides governments a meaningful opportunity to participate in the development of policies related to DNS issues. Over the last 6 years, NTIA has actively engaged with its counterparts in the GAC in developing advice to inform this program.

In December 2010, the GAC developed a scorecard of the outstanding issues governments had with the program. Between February and June of this year, GAC representatives from around the world met with the ICANN board in extended face-to-face discussions to review the GAC scorecard and identify specific differences between GAC advice and existing versions of the applicant guidebook. These unprecedented exchanges resulted in the adoption of a significant number of changes to the program.

NTIA believes that ICANN improved the new gTLD program by incorporating a significant number of proposals from the GAC, including providing law enforcement and consumer protection authorities with significantly more tools than those available in existing gTLDs. The fact that not all of GAC's proposals were adopted as originally offered does not represent a failure of the process or a setback to governments. Rather, it reflects the reality of a multi-stakeholder model.

As a member of the GAC, NTIA will continue to actively monitor and participate in discussions related to the expansion of new gTLDs. NTIA appreciates that certain trademark owners and other stakeholders have expressed concerns regarding the program. Safeguarding the rights of trademark owners and ensuring appropriate consumer protections as this process moves forward remains a top priority. As such, NTIA is committed to working with U.S. industry and other stakeholders as the new gTLD program unfolds to mitigate any unintended consequences.

In addition, NTIA intends to continue to collaborate with U.S. Government agencies to track their experiences and to coordinate the collection of data regarding the effects on consumers and business users. In particular, NTIA, working with other agencies, will focus on ensuring that law enforcement concerns are addressed through strengthened registry and registrar accreditation agreements and enhanced contract compliance.

NTIA will also be encouraging interested parties to collaborate in the development of metrics to facilitate the review of the new gTLD program. We feel strongly that the review must be informed by fact-based, real-time experiences that can be captured by data from a variety of sources.

NTIA is dedicated to maintaining an open, global Internet that remains a valuable tool for economic growth, innovation, and the free flow of information, goods, and services on line.

We believe the best way to achieve this goal is to continue to actively support and participate in multi-stakeholder Internet governance processes such as ICANN.

Thank you again for the opportunity to testify this morning. NTIA looks forward to working with Congress, U.S. businesses, individuals, and other stakeholders to preserve and enhance the multi-stakeholder model that has been the hallmark feature of global Internet institutions that have truly been responsible for the success of the Internet.

I'll be happy to answer any questions.

[The prepared statement of Ms. Alexander follows:]

Prepared Statement of Fiona M. Alexander, Associate Administrator,
Office of International Affairs, National Telecommunications and
Information Administration, U.S. Department of Commerce
Introduction

Good morning, Chairman Rockefeller and members of the Committee. I appreciate the opportunity to talk to you today on behalf of the National Telecommunications and Information Administration (NTIA) regarding the planned expansion of the Internet's domain name system (DNS) by the Internet Corporation for Assigned Names and Numbers (ICANN). NTIA is the Executive Branch expert on issues relating to the DNS and supports a multi-stakeholder approach to the coordination of the DNS to ensure the long-term viability of the Internet as a force for innovation and economic growth. Working with other stakeholders, NTIA is developing policies to preserve an open, interconnected global Internet that supports continued innovation and economic growth, investment, and the trust of its users. This multi-stakeholder model of Internet policymaking--convening the private sector, civil society as well as governments to address issues in a timely and flexible manner--has been responsible for the past success of the Internet and is critical to its future.

I will begin today by providing context for the announced expansion of generic top level domains (gTLDs) used on the Internet, detail the specific efforts of NTIA as the U.S. Government representative to the Governmental Advisory Committee (GAC) to improve the ICANN program, and then describe the tools available to NTIA and the global community to manage any challenges that may arise.

Context for Planned Expansion of the Domain Name System

ICANN is a not-for-profit corporation based in California that is responsible for coordinating the Internet's DNS. The DNS is a critical component of the Internet infrastructure. It works like a telephone directory, allowing users to reach websites using easy-to-understand domain names (e.g., <http://www.commerce.gov>) rather than the network server addresses (e.g., <http://170.110.225.163>) necessary to retrieve information on the Internet. ICANN develops policies through a bottom-up, multi-stakeholder led process with an international community of stakeholders that mirrors the global nature of the Internet. On September 30, 2009, NTIA, on behalf of the Department of Commerce, entered into an Affirmation of Commitments (Affirmation) with ICANN that established ICANN's multi-stakeholder, private-sector led model as the long-lasting framework for the technical coordination of the Internet DNS.¹ The Affirmation completed the transition begun in 1998 by a Memorandum of Understanding (MOU) between the Department and ICANN that was amended several times.

¹ See http://www.ntia.doc.gov/files/ntia/publications/affirmation_of_commitments_2009.pdf.

Since its inception in 1998, ICANN has been charged with promoting competition in the registration of domain names, while ensuring the security and stability of the DNS. The goal to establish new gTLDs beyond .com, .edu, .gov, .int, .mil, .net, and .org began over a decade ago. In 2000 and 2003, ICANN conducted a limited expansion of generic top level domain names. Resulting in the addition of .biz, .info, .name, .pro, .aero, .coop, .museum, .asia, .cat, .jobs, .mobi, .tel, and .travel gTLDs to the DNS. In 2005, it initiated a process to develop the policies and procedures necessary to introduce an unlimited number of new gTLDs. After six years of multi-stakeholder policy development and implementation planning, including input from governments through the GAC, the ICANN Board of Directors (Board) approved the rules for the new gTLD program in June 2011, publishing the rules in the form of an Applicant Guidebook.²

² See <http://newgtlds.icann.org/applicants/agb>.

Expansion of the gTLD space is expected to provide a platform for city, geographic, and internationalized domain names, among other

possible top level domain strings. Expansion of the new gTLD space has, since its inclusion in the original MOU with ICANN, been intended to allow new TLD operators to create and provide content in native languages and scripts, otherwise known as Internationalized Domain Names or IDN, in addition to new gTLDs in ASCII or Latin scripts. This type of change to the DNS is expected to enhance consumer trust and choice, and reinforce the global nature of the Internet. It is also expected that a portion of applications will be either generic words or brand-focused as part of business development, investment, and startup plans.

NTIA as a Member of the Governmental Advisory Committee (GAC)

The multi-stakeholder policymaking process seeks to involve all stakeholders, including governments, to achieve policy outcomes with greater speed and flexibility than traditional regulatory structures. Within ICANN, the GAC provides governments a meaningful opportunity to participate in the development of policies related to DNS issues. NTIA represents the U.S. Government in the GAC, which currently has over 100 members.

Over the last six years, NTIA has actively engaged with its counterparts in the GAC in developing consensus advice to inform ICANN's policy development and implementation program for the introduction of new gTLDs. This included the adoption by the GAC in March 2007 of "GAC Principles Regarding New gTLDs" that were intended to inform the on-going policy development process underway in ICANN's Generic Names Supporting Organization (GNSO).³ The GAC progressively refined its advice to the ICANN Board and community through a series of communiqués issued at the close of each of its meetings between March 2007 and December 2010. This occurred as the new gTLD program advanced from the GNSO policy recommendations that were adopted by the ICANN Board in June 2008 to the implementation proposals developed by ICANN staff and posted serially for public comment.

³ See <http://www.icann.org/en/topics/new-gtlds/gac-principles-regarding-new-gtlds-28mar07-en.pdf>.

In December 2010, the GAC developed a "Scorecard" of these outstanding issues governments had with the pending Draft Applicant Guidebook and requested direct discussions between the GAC and the ICANN Board to resolve them.⁴ Among these issues were:

⁴ See <http://www.icann.org/en/topics/new-gtlds/gac-scorecard-23feb11-en.pdf>.

objection procedures for governments,
procedures for the review of sensitive strings,
root zone scaling,
market and economic impacts,
registry-registrar separation,
protection of trademark rights and other intellectual property owners,
consumer protection issues,
post-delegation disputes with governments,
use and protection of geographic names,
legal recourse for applicants,
providing opportunities for stakeholders from developing countries,
law enforcement due diligence recommendations, and
the need for an early warning mechanism for applicants to identify whether a proposed string would be considered controversial or to raise sensitivities.

Between February 2011 and June 2011, GAC representatives from around the world met with the ICANN Board in extended face-to-face discussions to review the GAC Scorecard and to identify specific differences between GAC advice and the existing version of the Applicant Guidebook. The purposes of the sessions were to promote joint

understanding of the issues and arrive at an agreed-upon resolution of those differences wherever possible. These unprecedented GAC-ICANN Board exchanges resulted in the adoption by the ICANN Board of a significant number of GAC recommendations in the final Applicant Guidebook. Equally importantly, the GAC's advice established a solid foundation for the subsequent review of the new gTLD program by identifying markers or guideposts of government expectations that the benefits must not be outweighed by risks to users of the DNS.

NTIA believes that ICANN improved the new gTLD program by incorporating a significant number of proposals from the GAC. ICANN's new gTLD program also now provides law enforcement and consumer protection authorities with significantly more tools than those available in existing gTLDs to address malicious conduct. The fact that not all of the GAC's proposals were adopted as originally offered does not represent a failure of the process or a setback to governments; rather, it reflects the reality of a multi-stakeholder model.

Going Forward

As a member of the GAC, NTIA will continue to actively monitor and participate in discussions related to the expansion of new gTLDs within the ICANN process. NTIA appreciates that certain trademark owners and other stakeholders have expressed concerns regarding the new gTLD program. Safeguarding the rights of trademark owners and ensuring appropriate consumer protections as this process moves forward remains a priority. As applications for strings that are identifiable brands, products, or companies are introduced it will be important to ensure that trademark owners are properly protected. NTIA is committed to working with the U.S. industry and other stakeholders as the new gTLD program unfolds to mitigate any unintended consequences. The Affirmation sets up continuous multi-stakeholder review teams to evaluate ICANN's performance, including a review of the new gTLD program. This review will examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as effectiveness of the application and evaluation process, and the safeguards put in place to mitigate issues involved in the introduction or expansion. NTIA believes the review provides an opportunity for stakeholders to further refine the new gTLD program and make adjustments, as needed.

In addition, NTIA intends to collaborate with U.S. Government agencies responsible for consumer and intellectual property protection, competition policy, and law enforcement to track their experiences and to coordinate the collection of data regarding the effects on consumers and business users of the domain name system. In particular, NTIA, working with other agencies, will focus on ensuring that law enforcement concerns are addressed through strengthened Registry and Registrar Accreditation Agreements and enhanced contract compliance. NTIA will also be encouraging all interested parties to collaborate in the development of metrics to facilitate the review of the new gTLD program to which ICANN has committed. We feel strongly that the review must be informed by fact-based, real-time experiences that can be captured by data from a variety of sources.

Conclusion

NTIA is dedicated to maintaining an open, global Internet that remains a valuable tool for economic growth, innovation, and the free flow of information, goods, and services online. We believe the best way to achieve this goal is to continue to actively support and participate in multi-stakeholder Internet governance processes such as ICANN. This is in stark contrast to some countries that are actively seeking to move Internet policy to the United Nations. If we are to combat the proposals put forward by others we need to ensure that our multi-stakeholder institutions have provided a meaningful role for governments as stakeholders. NTIA believes that the strength of the multi-stakeholder approach to Internet policy-making is that it allows for speed, flexibility, and decentralized problem-solving and stands in stark contrast to a more traditional, top-down regulatory model characterized by rigid processes, political capture by incumbents, and in so many cases, impasse or stalemate.

Thank you again, Mr. Chairman for the opportunity to testify this morning. NTIA looks forward to working with Congress, U.S. business, individuals, and other stakeholders to preserve and enhance the multistakeholder model that has been a hallmark feature of global Internet institutions that have been responsible for the success of the Internet.

I will be happy to answer any questions.

Senator Klobuchar. Thank you very much.
Mr. Pritz.

STATEMENT OF KURT PRITZ, SENIOR VICE PRESIDENT, STAKEHOLDER
RELATIONS, INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS

(ICANN)

Mr. Pritz. Good morning, Senator. I am Kurt Pritz, the Senior Vice President of Stakeholder Relations for ICANN, the Internet Corporation for Assigned Names and Numbers, and I'm very pleased to be testifying before you today.

After more than 7 years of policy development and implementation planning, on January 12 next year ICANN will start receiving applications for new top-level domains, known as TLDs or gTLDs. TLDs are the names to the right of the dot, such as .com or .org. ICANN carefully and cautiously developed the requirements for the new gTLD program. And by ICANN, I mean the global multi-stakeholder community made up of governments, intellectual property experts, consumers, large and small businesses, not-for-profit organizations, Internet security experts, registrants, and Internet users.

The launch of the new gTLD program was part of ICANN's founding mandate when it was formed by the U.S. Government over 12 years ago. That mandate is to introduce competition and choice into the domain name system in a stable and secure manner. There is every reason to believe that the benefits offered by competition in virtually every other market will apply to the introduction of new gTLDs.

Expanding the number of TLDs will encourage innovation and result in competition and increased choice for Internet users. The 7 years of policy work that led to the formation of the new gTLD program was based upon this principle.

In the last decade, the number of domain name registrations has increased nearly tenfold, enabling more than \$3 trillion of commerce annually. As with the introduction of any innovation, new gTLDs will generate interest, excitement, and, yes, require a period of learning. Internet users have already shown a great adaptability and they will find value wherever it is created as a result of this program.

The new TLDs that will come in under this program have significantly increased safeguards compared to TLD registries that exist today. There will be new and extensive protections to trademark holders, including a universal trademark clearinghouse, a rapid takedown process, and new methods of recourse for law enforcement agencies. These new protections, when combined with the distribution of domain names into many new registries, will sharply reduce pressure for defensive registrations.

New TLDs will also bring better consumer and security protections. Security protection experts developed specific measures to combat malicious conduct and provide law enforcement authorities with more tools to fight malfeasance. These include criminal background checks on applicants, a requirement for DNSSEC deployment, the requirement for maintenance of a thick WHOIS data base, and centralized access to all TLD data.

What are some of these potential innovations? Here are some published examples. Dot-brand type TLDs can diminish consumer confusion and develop consumer awareness around the reliability of the website. This is similar to the trust that your constituents have today when visiting a dot-gov website. Consumers know when they type in "Senate.gov" they are reaching the domain of the U.S. Senate.

Financial industry participants are considering a financial services TLD where banks and financial institutions can offer greater trust to their customers, more secure transactions, and control the data flow for those transactions. There are new jobs already created and likely more to come. In preparation for the launch of new TLDs, dozens of small businesses have sprung up to help TLD applicants understand the opportunities and potential benefits of new TLDs.

Lately, innovation has been limited to country code TLDs, such as dot-co and dot-ly, that are developing business models to meet world demand. These TLDs are not under contract with ICANN and not required to offer the protections available in the new gTLD program.

The important issues under discussion before this committee have been the subject of discussion, debate, and compromise for the past 7 years. Not-for-profit organization and trademark holders, along with the rest of the ICANN community, provide the focused and targeted input into the design of this program. Their input has yielded significant improvements through seven versions of the applicant guidebook. Consensus has been reached across the spectrum of participants and the program is better

for it. Many stakeholders not represented at this table have also participated in the program and are awaiting their opportunity to take part.

Thanks for inviting me to testify. I'd be happy to answer any questions you might have.

[The prepared statement of Mr. Pritz follows:]

Prepared Statement of Kurt Pritz, Senior Vice President, Stakeholder Relations, Internet Corporation for Assigned Names and Numbers (ICANN)

Chairman, Ranking Member and members of the Committee, thank you for the opportunity to address you today. I am here today representing the Internet Corporation for Assigned Names and Numbers (ICANN). I am Kurt Pritz, ICANN's Senior Vice President for Stakeholder Relations. Among other responsibilities at ICANN, I manage the Program to implement new Top-Level Domains (also referred to as new gTLDs), which is the subject of this hearing.

I. New gTLDs: Safely Bringing Competition and Choice to the Internet

On June 20, 2011, the ICANN Board of Directors approved the implementation of the New gTLD Program, the culmination of years of policy development by the broad Internet community.\1\

\1\ ICANN Board Resolution 2011.06.20.01, at <http://www.icann.org/en/minutes/resolutions-20jun11-en.htm>.

Now is the time for launching that program. It is the product of well thought out, thoroughly debated policies that are designed to benefit the billions of Internet users through increased competition, choice and innovation. It is also designed to provide a safer, stable marketplace through the implementation of rights protection mechanisms, malicious conduct mitigation measures and other registrant protections. ICANN extended the discussion to hear all those that wished to participate, to all geographies and all stakeholders. Each issue was thoroughly discussed, there have been no new issues raised. Now is the time to realize the benefits of an expanded and safer marketplace.

The New gTLD Program was created through input across all sectors, including Internet end users, global Fortune 500 businesses, small businesses, trade associations, governments, non-commercial interests, intellectual property experts, brand holders, Internet security experts, ICANN registries and registrars, domain name registrants, Internet service providers, technical experts, not-for-profit organizations and more.

The planning for the New gTLD Program started in 2005 within ICANN's consensus-based policy development process. Since 2008, the New gTLD Program has been shaped through:

Seven versions of the Applicant Guidebook;

At least 59 explanatory memoranda and independent reports, including 5 economic studies;

47 separate, extended public comment periods;\2\

\2\ Comments came from multiple sources, including: NGOs and not-for-profit organizations, such as the Red Cross and the International Olympic Committee (IOC); governments, through the GAC and individually; ICANN's constituencies, Supporting Organizations and Advisory Committees; brand/mark holders, such as Microsoft, Yahoo, Time Warner, AT&T, BBC, and IBM; industry associations, such as International Trademark Association (INTA), World Intellectual Property Organization (WIPO), European Communities Trademark Association (ECTA), and the American Banking Association (ABA); individuals; small businesses/entrepreneurs and many other groups.

Over 1450 pages of summary and analysis on public comments

received; and

Input from no less than ten independent expert and community working groups.

Extensive Protections Will Be Introduced

The New gTLD Program today includes significant protections beyond those that exist in current TLDs, including new mandatory intellectual property rights protection mechanisms and heightened measures to mitigate against malicious conduct. These new protections are intended to provide a safe, stable Internet, and include:

New Trademark protections:

Uniform Rapid Suspension: A rapid, inexpensive way to

take down infringing domain names

Trademark Clearinghouse: a one-stop shop so that trademark holders can protect their property rights in ALL new TLDs with one registration

Mandatory sunrise and Trademark Claims processes for all new gTLDs

The requirement to maintain thick Whois information, the provision of centralized access to zone file data, and a strong incentive to provide a searchable Whois database-- all to make it easier for rights holders to identify and locate infringing parties

A post-delegation dispute procedure under which rights holders can assert claims directly against TLD registry operators that play an active role in facilitating domain name abuse.

Measures to mitigate malicious conduct:

Background reviews of applicants, including reviews for past criminal history (including the use of telecommunications or the Internet to facilitate crimes, illegal sale of drugs, and others);

Rejection of applications where the applicant has a pattern of adverse decisions under the UDRP (Uniform Domain Name Dispute Resolution Policy), or has been found to act in bad faith or reckless disregard under cybersquatting legislation;

A requirement to have a plan to implement domain name system security extensions (DNSSEC), reducing the risk of "man-in-the-middle" attacks and spoofed DNS records;

A requirement to maintain enhanced, or "thick", WHOIS records at the registry level to allow more rapid search capabilities, facilitating efficient resolution of malicious conduct activities;

A centralized zone file access system to allow for more accurate and rapid identification of key points of contact for the domains within each gTLD. This reduces the time necessary to take corrective action within TLDs experiencing malicious activity;

A requirement to establish a single point of contact responsible for the handling of abuse complaints (as requested by law enforcement authorities);

Requirements that New gTLD Registry Operators must:

Maintain a Continued Operations Instrument sufficient to fund basic registry operations for a period of three years in case of business failure, to protect consumers and registrants within that gTLD in the event of registry failure.

Maintain continuity and transition plans, including regular failover testing.

Cooperate with ICANN in the event transition to a new registry operator is necessary. ICANN will identify an Emergency Back-End Registry Operator to assist in the registry transition process and provide emergency registry services as needed.

Objection Processes

The New gTLD Program includes robust processes to assure that stakeholders generally, and governments and rights holders in particular, have the opportunity to raise objections that could lead to the rejection of applications that may cause:

User Confusion;

Infringement of legal rights, particularly intellectual property rights;

Introduction of TLD strings that are contrary to generally

accepted legal norms of morality and public order as recognized under principles of international law; and

Misappropriation of community names or labels.

In addition, there will be a specialized function, an "Independent Objector" that will act solely in the best interest of the public, and may file an objection to an application that may give rise to the concerns raised above.

Rights and Protections Mitigate Costs

The existence of objection processes and enhanced rights protection mechanisms were adopted to mitigate the concerns of trademark holders regarding increased costs. With these objection rights, trademark holders have the opportunity to consider whether to apply for a new gTLD based on business needs rather than defensive considerations. These measures greatly reduce the chance that another entity will succeed in applying for the trademarked name. The new rights protections mechanisms also reduce the need for trademark holders to defensively register names across new gTLDs. Further, we've learned from prior rounds that trademark holders often do not engage defensive registrations outside of the most popular TLDs.

Additional detail on all of these new protections is provided below.

Competition and Consumer Choice

The Board's approval of a program carefully crafted by the global Internet community is consistent with ICANN's mission to increase consumer choice, competition and innovation. Organizations will now have the opportunity to apply for gTLDs in the scripts of the world's languages, to open the world's marketplace further and to welcome the next billion non-English speaking users to the Internet.

The opening of new gTLDs will be limited by round and by demand. Two prior rounds of new TLDs have been limited by size or type--and the restrictions hobbled the realization of benefits. Competition results from opening, not limiting markets, and encouraging investment and innovation.

After years of policy and implementation work, the Internet community and Board determined that the launch of the new gTLD program was necessary and important in order to increase competition and innovation in the DNS--and I strongly believe this remains the right decision.

This testimony provides information on how and why the New gTLD Program was formed and how it serves the public interest to act now.³

³ ICANN has had the opportunity to testify before the House Committee on the Judiciary, Subcommittee on Intellectual Property, Competition and the Internet in September 2009 and May 2011 regarding the New gTLD Program. Information on those proceedings are available at http://judiciary.house.gov/hearings/hear_090923.html and http://judiciary.house.gov/hearings/hear_05022011.html.

II. Introduction of New Top Level Domains Is One of ICANN's Founding Mandates

ICANN is recognized by the world community as the authoritative body for technical coordination and policy development regarding the security, stability and interoperability of the Domain Name System, or DNS, and we work to maintain a single global Internet. ICANN is organized as a California, public benefit, non-profit corporation. We serve this public benefit through a bottom-up, consensus-based, multi-stakeholder model.

A founding mandate for ICANN, included within the United States Government's "White Paper on the Management of Internet Domain Names and Addresses",⁴ is to create competition in the domain name market and specifically, to "oversee policy for determining the circumstances under which new TLDs are added to the root system."⁵ The introduction of new gTLDs "has been a longstanding goal" of the relationship between the Department of Commerce and ICANN.⁶ The relationship formed with the United States Government in 1998, and set out in the many Memoranda of Understanding between the Department of Commerce and ICANN, included a core objective to "Define and implement a predictable strategy for selecting new TLDs."⁷ This fundamental assumption that increasing the number of gTLDs will increase competition resulted in the House Committee on Energy and Commerce initiating a 2001 hearing regarding the potential detrimental effects to competition when ICANN approved only seven of 200 applied-for TLDs in an earlier application round.⁸

⁴ United States Department of Commerce, White Paper on the Management of Internet Domain Names and Addresses ("White Paper"), at http://www.ntia.doc.gov/ntiahome/domainname/6_5_98dns.htm (June 6,

1998).

\5\ Id.

\6\ Testimony of Fiona Alexander, Associate Administrator, National Telecommunications and Information Administration, June 4, 2009, before the Subcommittee on Communications, Technology, and the Internet, Committee on Energy and Commerce, United States House of Representatives, available at <http://www.ntia.doc.gov/speechtestimony/2009/testimony-associate-administrator-fiona-alexander-issues-concerning-internet-co>.

\7\ See, e.g., Amendment 6 to Memorandum of Understanding Between the U.S. Department of Commerce and The Internet Corporation For Assigned Names And Numbers, at http://www.ntia.doc.gov/ntiahome/domainname/agreements/amendment6_09162003.htm (Sept. 16, 2003).

\8\ See Transcript of February 8, 2001 Hearing before the Subcommittee on Telecommunications and the Internet of the Committee on Energy and Commerce, House of Representatives, On Hundred Seventh Congress, First Session, available at <http://archives.energycommerce.house.gov/reparchives/107/hearings/02082001Hearing37/print.htm> ("some view ICANN's approval of only a limited number of names as thwarting competition").

III. The ICANN Model At Work: How ICANN Approved the Expansion of New gTLDs

A. ICANN's Multi-Stakeholder Model

ICANN's processes and policy development depend on the engagement of stakeholders around the world. Stakeholders participate in many ways, including participation in the policy development processes, in public comment processes, on advisory committees, and in ICANN's public meetings.

ICANN's model is based on the principle of reaching consensus solutions to difficult problems.\9\ Consensus within ICANN does not mean unanimous community support on every issue. The Internet community brings a wide range of viewpoints to the discussions, often with diverging interests. Reaching a thoughtful, negotiated solution that is acceptable to most, and ensures that all viewpoints are considered--that is what ICANN strives to do and has done with this program.

\9\ While my testimony today focuses on implementation of community-driven policy recommendations, the ICANN model is also used in non-policy matters.

As part of this process, ICANN brings together working groups of experts to recommend solutions for further community review. ICANN works closely with all stakeholders to form consensus-based and community-vetted solutions.

These vital discussions give all interests--including those representative of my fellow panelists--a seat at the table.

ICANN has noted the PR campaign driven by industry groups against the New gTLD Program, and the revisionist history they present.

The six-year inclusive policy development process that led to approval of this Program gave all sectors and industries ample opportunity to contribute their thoughts and convey their concerns. The concerns raised by this group of stakeholders were considered, debated and addressed along with those of many other stakeholders. The record is clear that changes have been made based upon their input.\10\

\10\ For example, the Association of National Advertisers twice provided comments on the New gTLD Program, on December 15, 2008 and April 12, 2009. In 2008, the ANA provided ICANN with a list of five specific proposals for ICANN's consideration within the program. All five of its proposals have been addressed in the current design: trademark protections have been strengthened; there will be greater transparency of applicant data and more consistent information available on registrants; registration fees have been studied; objection processes have been clarified and strengthened; and provisions have been made for attaching higher security requirements based upon the nature of the string (e.g., an applicant for a financially-related string should have high security capabilities).

They are now forum shopping and asking Congress to give them another bite at the apple. After working for years within ICANN's multistakeholder framework to obtain significant concessions for intellectual property rights holders, they now seek to upset the carefully crafted compromise which they helped create. They now want ICANN to restart the clock, at the expense of the other important participants who negotiated in good faith and who are eager for the program to launch.

B. New Generic Top Level Domains--The ICANN Model at Work

The New gTLD Program demonstrates the strength of the bottom-up, multi-stakeholder process: The New gTLD Program under discussion today is the implementation of an ICANN-community policy recommendation to achieve one of ICANN's foundational mandates.^[11] ICANN has worked closely with the community in building policy and an implementation plan.

^[11] In addition to the White Paper, the introduction of New gTLDs was consistently identified as a core objective in each of ICANN's Memoranda of Understanding with the U.S. Department of Commerce (1998--2006) and the Joint Project Agreement, calling for ICANN to "[d]efine and implement a predictable strategy for selecting new TLDs." See Amendment 6 to Memorandum of Understanding Between the U.S. Department of Commerce and The Internet Corporation For Assigned Names And Numbers, at http://www.ntia.doc.gov/ntiahome/domainname/agreements/amendment6_09162003.htm (Sept. 16, 2003). The study and planning stages, extending back several years, include two trial rounds of top-level domain applications held in 2000 and 2003. The experience of those rounds was used to shape the current process.

The New gTLD Program: Formed through Community Engagement

From 2005-2007, business and commercial users, contracted registries and registrars, intellectual property interests, non-commercial users and the at-large Internet community conducted an intensive formal, Bylaws-defined policy development process on the addition of new gTLDs. After intensive policy discussion, all those constituency groups concluded that new gTLDs should be made available.

The principles guiding the new gTLD policy development process included that:

New gTLDs will benefit consumer choice and competition;

The implementation plan should also allow for Internationalized Domain Names (domain names that are written solely in a non-ASCII script, such as Chinese or Cyrillic) at the top level;

The introduction of new gTLDs should not cause security or stability issues;

Applications must be assessed in rounds until the scale of demand is clear; and

Protection of various appropriate interests requires objection and dispute resolution processes.

In 2008, the ICANN Board approved the policy on the introduction of new gTLDs^[12] and directed its implementation. Since October 2008, ICANN has produced all of the documentation cited above--seven versions of the Applicant Guidebook (detailing the guidelines and requirements for the evaluation process) as well as numerous report and memoranda. All have been the subject of public comment and vigorous debate. Anyone and everyone can join in; indeed, the process at times has been noisy given the numbers of contributors and divergent views.

^[12] GNSO Final Report on the Introduction of New Top Level Domains ("Final Report"), at <http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-part-a-08aug07.htm> (Aug. 8, 2007); ICANN Board resolution, <http://www.icann.org/en/minutes/resolutions-26jun08.htm> (June 26, 2008); GNSO Minutes, <http://gns0.icann.org/meetings/minutes-gns0-29oct03.html> (Oct. 29, 2003).

One of the foundational documents influencing the GNSO Final Report and the community's implementation work is the GAC Principles Regarding New gTLDs, at http://gac.icann.org/system/files/gTLD_principles_0.pdf (Mar. 28, 2007).

Nearly every ICANN Supporting Organization and Advisory Committee was represented in targeted community-based working groups or expert teams formed to address implementation issues, as were representatives from all sectors of society.

The gTLD policy-making body, the Generic Names Supporting Organization, and its component stakeholder groups and constituencies participated in all aspects of the implementation work arising out of its policy recommendations. The Country Code Names Supporting Organization, representing ccTLD operators, was particularly active on issues relating to internationalized domain names in the New gTLD Program.

ICANN's technical Advisory Committees provided direct input into the implementation work. For example, Root Server System operators and

Security and Stability Advisory Group members provided information that there is no expected significant negative impact of new gTLDs on the stability and scalability of the root server system.

Members of the At-Large Advisory Committee--the home within ICANN for individual Internet users--served on nearly every working group and team, giving the world's Internet users a voice in implementation discussions. The At-Large Advisory Committee has been an active participant in the formal public comment process.

(a) Governments Provided Advice and Engaged In Broad, Substantive Consultations on New gTLDs

ICANN's Governmental Advisory Committee, made up of over 110 of the world's governments, including the United States of America, has been deeply and effectively involved in the development of the New gTLD Program. The Governmental Advisory Committee also coordinated information exchanges between law enforcement and ICANN.

The ICANN Board and the Governmental Advisory Committee held a series of landmark consultations on the New gTLD Program.

Through accommodations made by both sides,¹³ changes were made to the New gTLD Program in each of twelve identified areas including:

¹³ The final points of discussion between the Governmental Advisory Committee and the Board are collected at <http://www.icann.org/en/minutes/rationale-gac-response-new-gtld-20jun11-en.pdf>, beginning at page 52.

More rigorous trademark protections (making them mandatory

and transferring costs to wrongdoers),

Providing an objection path for governments to avoid delegation of sensitive TLD applications,

Agreement on a post-delegation economic study to test the results of first set of new gTLDs,

Agreement that a post-launch study should be conducted on the effectiveness of new trademark protections and any effects on root zone operations, and

Development of a process for assistance for needy applicants.

Ultimately, mutual agreement among the Board and the Governmental Advisory Committee was reached that, subject to Board approval, the New gTLD Program would proceed to launch, and the process would be self-improving through subsequent studies.¹⁴

¹⁴ The Board's Rationale regarding potential areas of difference with the Governmental Advisory Committee is available at <http://www.icann.org/en/minutes/rationale-gac-response-new-gtld-20jun11-en.pdf>.

(b) Law Enforcement Agencies Are Active Contributors to the New gTLD Program Work

Law enforcement agencies worldwide have worked closely with ICANN in the new gTLD implementation process, with a goal of reducing domain name abuses. Representatives of U.S. law enforcement agencies played a critical role in proposing standards for background screening for applicants. Law enforcement agencies worldwide, including the FBI, the UK Serious Organized Crimes Agency (SOCA) and the Royal Canadian Mounted Police, supported proposals to aid in the prevention and disruption of efforts to exploit domain name registration procedures for criminal purposes. DNS abuse and security are regularly the subject of collaborative meetings between ICANN and the US law enforcement community, as well as representatives of international agencies.¹⁵ ICANN expects this successful collaboration to continue. To that end, there are formal DNS Abuse sessions at every ICANN public meeting where ICANN and law enforcement representatives come together to advance this important work.

¹⁵ ICANN's relationships with law enforcement are not limited to the New gTLD Program; ICANN coordinates regularly on security-related issues and to address threats to the DNS.

(c) Large and Small Businesses and Corporations Have Helped Shape the Program

Business and industry representatives have participated in the new gTLD implementation process from the beginning, through the GNSO's Business and Commercial Users Constituency, through trade organizations

and individually, and remain involved today. Participation cuts across business size and geography. Many global trade associations and corporations have participated in the online comment forums, either individually or through coordinated responses; similarly, great numbers of small businesses have been active. And the involvement continues.

For example, representatives of Microsoft, Google, Time Warner and the BBC are active members of a current community group working to refine the implementation of the Trademark Clearinghouse, one of the new rights protection mechanisms being launched. Representatives of large and small business have been integral in forming the heightened rights protection mechanisms described above, and have contributed to the development of other portions of the program, including participation in many community working groups.

(d) Intellectual Property Owners/Brandholder Experts have been Involved at Every Step

Members of ICANN's Intellectual Property Constituency actively participated in the policy development concerning the introduction of new gTLDs, including the recommendation that new gTLD strings must not infringe the existing legal rights of others that are recognized or enforceable under generally accepted and internationally recognized principles of law" that was included in the 2007 Final Report approved by the Board.

In March 2009 ICANN formed a team of 18 intellectual property experts from around the world representing the interests of trademark holders, business and trade associations --the Implementation Recommendation Team (IRT).¹⁶ The IRT's work led to the identification of specific rights protection mechanisms that are now included in the Applicant Guidebook based on the community and the Governmental Advisory Committee's further input and guidance.

¹⁶ IRT Membership Directory, at https://st.icann.org/data/workspaces/new-gtld-overarching-issues/attachments/trademark_protection:20090407232008-0-9336/original/IRT-Directory.pdf.

¹⁷ IRT Resolution, at <http://www.icann.org/en/minutes/resolutions-06mar09.htm#07> (Mar. 6, 2009).

(e) Additional Subject Matter Experts Formed Teams to Combat Malicious Conduct and Strengthen Registrant Protections

In addition to the regular participants in its processes, the ICANN model affords opportunities for experts to provide assistance on particularly challenging topics. ICANN has access to and the ability to form world-class expert groups, for example:

The Implementation Recommendation Team and Special Trademark Issues team created rights protection mechanisms;

A Zone File Access Advisory group set out standardized access zone file information to simplify access for those investigating abuses;¹⁸

¹⁸ Zone File Access Advisory Group information and documents are available at <http://www.icann.org/en/topics/new-gtlds/zone-file-access-en.htm>.

The Security and Stability Advisory Committee discussed tools to mitigate the potential for malicious conduct. Its

report provided guidance into the management of glue records;

A High-Security Zone TLD Advisory Group was formed within ICANN in response to requests from governments and the financial services sector to create higher security requirements for TLDs where users have expectations of higher security;

The Joint Applicant Support Working Group addressed support for needy applicants, and ICANN is currently considering how to implement the recommendations into the first round of the New gTLD Program;

The Joint ccNSO-GNSO IDN Working Team discussed issues related to Internationalized Domain Names;

The Vertical Integration Working Group addressed community solutions to the issue of Registry-Registrar cross ownership;

The Temporary Drafting Group recommended enhancements to the new gTLD Registry Agreement and post-delegation dispute resolution procedures; and

The Implementation Assistance Group, comprised of over 50 members representing various perspectives such as intellectual property interests and Registry Operations, are assisting ICANN in implementing specified Clearinghouse processes.

Each group worked openly and transparently, and produced reports available for public comment.

Importantly, ICANN listened to and acted on all work produced by the experts and the more general community and modified Applicant Guidebook sections to implement the results of this work.

(f) Economic Studies Confirm Overall Benefits of Opening the DNS; Further Studies Would Offer No Benefit

Several expert economic studies have recognized that the fundamental benefits of increased competition (that apply in almost all markets) will also benefit Internet users through enhanced service offerings, competition, innovation and consumer choice in the domain name market.

As the new gTLDs moved closer to launch, there were calls for economic studies to better document the fundamental assumption that increasing the number of gTLDs will increase competition. In response, ICANN commissioned five economic studies that examined anticipated benefits and costs of the New gTLD Program, the effects of price constraints, and the benefits of vertical integration. All support a conclusion that Internet users stand to benefit from the introduction of new gTLDs.

Those studies are:

Dr. Dennis Carlton, Report Regarding ICANN's Proposed Mechanism for Introducing New gTLDs, at <http://www.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09-en.pdf> ("Carlton I");

Dr. Dennis Carlton, Preliminary Analysis Regarding Price Caps for New gTLD Internet Registries, at <http://www.icann.org/en/topics/new-gtlds/prelim-report-registry-price-caps-04mar09-en.pdf> ("Carlton II");

CRA International, Revisiting Vertical Separation of Registries and Registrars, at <http://www.icann.org/en/topics/new-gtld-crai-report-24oct08-en.pdf>;

Michael Katz, Gregory Rosston and Theresa Sullivan, An Economic Framework for the Analysis of the Expansion of Generic Top-Level Domain Names, at <http://www.icann.org/en/topics/new-gtlds/economic-analysis-of-new-gtlds-16jun10-en.pdf> ("Katz/Rosston Phase I"); and

Michael Katz, Gregory Rosston and Theresa Sullivan, Economic Considerations in the Expansion of Generic Top-Level Domain Names, at <http://www.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf> (Katz/Rosston Phase II).

The two Katz/Rosston reports were commissioned by ICANN to directly address remaining community questions on the potential costs and benefits of the expansion of the gTLD space. Performed in two phases, Phase I provided a survey of published studies and resources on the potential impacts of new gTLD introduction and examined theoretical arguments on the benefits and costs of increased numbers of TLDs. Phase II provided reports of empirical studies proposed in Phase I, to help assess costs and benefits of new gTLDs.

Katz's and Rosston's work was consistent with the basic findings of the three previous reports, and supported an open approach in which new gTLDs are added to the root, subject to appropriate restrictions and mechanisms (such as rights protection mechanisms) designed to minimize potential costs to trademark holders and others. As discussed above-- and as referenced in Katz's and Rosston's work--ICANN has adopted these restrictions, as seen in the inclusion of significant rights protection mechanisms.

What remains clear, as stated by Dr. Carlton, a noted economics professor and former Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice, from October 2006 through January 2008, is that any resultant delay of the launch of the New gTLD Program "is likely inconsistent with consumer interests" and could "substantially reduce [consumer] welfare." [Emphasis added.] \19\

\19\ Carlton I, paragraphs 23, 39 passim.

Dr. Carlton explained, "ICANN's plan to introduce new gTLDs is

likely to benefit consumers by facilitating entry which would be expected both to bring new services to consumers and mitigate market power associated with .com and other major TLDs and to increase innovation." \20\ Delay will inhibit competition in the use of generic, non-trademarked terms, and runs counter to the generally accepted view that market entry benefits consumers by expanding output and lowering price. Potential innovations in the new gTLD namespace will be stifled if limitations to entry are imposed, which would ``essentially freeze the number of TLDs fifteen years after the first commercial development of the Internet." \21\

\20\ Id. at paragraph 23.

\21\ Id.

Calling for a delay in the entry of new gTLDs serves to perpetuate existing market conditions: concentration within some existing registries, most generic strings unavailable, and those that trade on the value of the current marketplace holding portfolios based upon the value of current .COM names.\22\

\22\ Katz/Rosston Phase II, at paragraphs 75-76.

ICANN's Board and the Governmental Advisory Committee agreed that further economic study would not be beneficial.\23\ Instead, the focus turned to the collection of information that will inform the analysis of the effects of the introduction of new gTLDs after the first round. The Applicant Guidebook now includes application questions to collect information relating to the stated purposes and anticipated outcomes of each application, for use in later studies.

\23\ Rationale for the Board's decision that no further economic studies would be beneficial at this time is available at <http://www.icann.org/en/minutes/rationale-economic-studies-21mar11-en.pdf>.

IV. The Protections In the New gTLD Program are Substantial

The implementation of the community's policy for the New gTLD Program looks entirely different today than in October 2008. The many revisions to the Applicant Guidebook incorporated recommendations and addressed concerns raised by intellectual property holders, governments, law enforcement and security experts, technical experts, business interests, non-commercial interests, individual Internet users, and others.

Below are highlights of the results of the community's work.

A. Trademark Protection: New gTLDs Will Have Robust Rights Protection Mechanisms (RPMs) to Protect Marks and Combat Cybersquatting
New gTLDs will have significant RPMs that don't exist in current gTLDs.

The RPMs will help rights holders protect trademarks efficiently, in terms of both time and money. When new gTLDs launch, trademark holders will have the opportunity to register their trademarks in a single repository that will serve all new gTLDs, the Trademark Clearinghouse. (Currently, trademark holders go through similar rights authentication processes for each separate top-level domain that launches.)

New gTLD registries are required to use the Trademark Clearinghouse in two ways. First, they must offer a ``sunrise" period--a pre-launch opportunity for rights holders to register names in the new gTLD prior to general registration. Second, a Trademark Claims service will notify rights holders (``Trademark Claims") of domain name registrations that match records in the Clearinghouse for a period of time at the beginning of general registration.

The Trademark Clearinghouse will increase protections, as well as reduce costs for trademark holders and start-up registries.

Also with new gTLDs comes the advent of the Uniform Rapid Suspension system (URS), a streamlined version of the Uniform Domain Name Dispute Resolution Policy (UDRP) process, allowing trademark holders a quicker and simpler process through which clear-cut cases of infringing registrations can be ``taken down." The URS and the current UDRP will remain mandatory within new gTLDs.

New gTLDs offer protections to trademark holders in the event a registry is actively involved in domain name abuse. The Post-Delegation Dispute Resolution Procedure (PDDRP) provides a mechanism to make claims directly against registries affirmatively involved in abuses involving domain name registrations.

These RPMs are contemplated to address the issues raised in the economic studies as a means of reducing the potential costs associated with the introduction of new gTLDs.\24\ Opponents of the new gTLD process have mischaracterized the fact that economists identified specific areas of risk that could be mitigated (such as intellectual

property protection costs) as a conclusion that the New gTLD Program will result in net economic harm. As ICANN has explained previously, that is an unsupported reading of the economic studies. The economists noted the benefits of innovation, competition and choice, and concluded that risks and costs could be mitigated through the implementation of RPMs and other mechanisms such as malicious conduct mitigation measures.

\24\ See, e.g., Katz/Rosston Phase II at paras 64-65, 120.

The rights protection mechanisms in the Applicant Guidebook provide trademark holders with an alternative to engaging in defensive registrations.\25\ The provision of effective rights protection mechanisms is shown to reduce the need for trademark holders to engage in defensive registrations--but the rights protection mechanisms cannot be too strict, or the growth of a new TLD may be impaired.\26\ Unsubstantiated fear of forced defensive registrations is not sufficient reason to stall new gTLDs and delay the benefits of introducing competition into the DNS.

\25\ See Dr. Dennis Carlton, "Comments on Michael Kende's Assessment of Preliminary Reports on Competition and Pricing", at https://st.icann.org/data/workspaces/new-gtld-overarching-issues/attachments/tld_demand_and_economic_analysis:20091007232802-2-13939/original/carlton-re-kende-assessment-05jun09-en.pdf (June 5, 2009).

\26\ Katz/Rosston Phase II, at page 52.

In addition, Economic studies refuted the claims that costs of defensive registrations in new gTLDs will be prohibitive. Independent studies support the conclusion that as defensive registrations are made in proportion to the popularity of the gTLD, the large majority of defensive registrations are in .COM and .NET.\27\ Only if a new gTLD is very popular will there be a significant need for defensive registrations. But, it also follows that if a new gTLD is popular, then it likely is delivering high benefits. Thus, the dual claims of low benefits and high defensive registration costs are unlikely to be simultaneously true.

\27\ See http://www.circleid.com/posts/20090202_analysis_domain_names_registered_new_gtlds/.

B. Consumers Will Be Protected Through Efforts to Mitigate Malicious Conduct

The expert and community work to address the potential for increased malicious conduct in new gTLDs has generated many enhanced protections in the Applicant Guidebook. With the assistance and involvement of external experts such as the Anti-Phishing Working Group, the Registry Internet Safety Group, members of the Forum of Incident Response and Security Teams (FIRST), and others from the Internet security first responder community, nine specific mechanisms were developed that will improve consumer protection \28\ and enhance the public interest. They include:

\28\ While not related to mitigating malicious conduct, consumers and registrants will also be protected due to the work done on registry continuity and the creation of new transition procedures for use in the event of registry failure.

Prospective registry operators will be appropriately reviewed for criminal history according to established criteria, including the use of telecommunications or the Internet to facilitate crimes, illegal sale of drugs, violation of the UN Convention against Transnational Organized Crime and others. Where the applicant has a pattern of adverse decisions under the UDRP (Uniform Domain Name Dispute Resolution Policy), or has been found to act in bad faith or with reckless disregard under the US Anti-cybersquatting Consumer Protection Act (ACPA) or equivalent legislation, applications will be rejected.

Each new gTLD will be required to have a plan to implement domain name system security extensions (DNSSEC), reducing the risk of "man-in-the-middle" attacks and spoofed DNS records.

Enhanced, or "thick" WHOIS records at the registry level will allow more rapid search capabilities to facilitate efficient resolution of malicious conduct activities.

A centralized zone file access system allows for easier dissemination of registrant data, reducing the time necessary to take corrective action against registrants.

All new gTLD operators are required to establish a single point of contact responsible for the handling of abuse complaints. This requirement is a fundamental step in successfully combating malicious conduct within new gTLDs.

Mitigating malicious conduct is and will continue to be an overarching issue within the new gTLD space. The participation of experts has produced mechanisms to benefit all Internet users, providing means for safer online interactions. The contributions of the Governmental Advisory Committee and law enforcement representatives broadened the scope of these protections.

C. Registrant Protections Regarding Registry Operator Continuity and Compliance

In addition to the protections in existing gTLDs, such as data escrow provisions, and participation in Contractual Compliance investigations, there are notable new protections in the New gTLD Program regarding the activities of Registry Operators. New gTLD Registry Operators must:

Maintain a Continued Operations Instrument sufficient to fund basic registry operations for three years in case of business failure, to protect consumers and registrants within that gTLD in the event of registry failure.

Maintain continuity and transition plans, including regular failover testing. In the event transition to a new registry operator is necessary, the registrar is obligated to cooperate with ICANN. ICANN is working to identify an Emergency Back-End Registry Operator to assist in the registry transition process and provide emergency registry services as needed. The continuity and transition planning mitigates the potential risk of consumer losses due to registry failure raised within the economic studies.²⁹

²⁹ As a companion protection for registry operators that maintain exclusive use over all registrations within a TLD--such as brand holder--in the event of registry failure, ICANN may not transfer registry operations without the consent of the registry operator.

D. Objection Processes Empower the Public and Governments

After the application round closes, information on applied-for gTLDs will be made public. At that time, entities and individuals can review the list of strings and consider if they wish to object to any individual application.

The New gTLD Program allows the Governmental Advisory Committee to inform ICANN that there are concerns with an application. Depending on the level of support within the GAC, the advice may result in a presumption that the Board should not approve the application.

There are also four formal objection processes that can be initiated by the public, each administered by a well-known international dispute resolution service provider and protecting against:

Internet User Confusion;

Infringement of legal rights, particularly intellectual property rights;

Approval of new TLDs that are contrary to generally accepted legal norms of morality and public order as recognized under principles of international law; and

Misappropriation of community names or labels

In addition, an Independent Objector will be appointed with the ability to file objections in certain cases where an objection has not already been made to an application that will infringe the interests listed above. The Independent Objector will act solely in the best interest of the public.

V. ICANN is Committed to an Orderly Implementation of the First Round of the New gTLD Program

ICANN's role in the New gTLD Program is to ensure that the program is fairly, objectively and successfully implemented.

A. ICANN Is Operationally Ready to Administer the New gTLD Program

ICANN's New gTLD Program Office: ICANN will operate a timely,

predictable, transparent, consistent program. ICANN is working to ensure operational readiness for an orderly implementation, including enhanced security for the application and evaluation systems to prevent inappropriate access to the infrastructure or data.

Evaluation service providers have been selected: Each has the global and technical knowledge and resources to accomplish the planned work. The gTLD Program Office includes separate quality assurance, governance, systems and customer service functions. Evaluation service providers are completing training to normalize scoring procedures.

ICANN-Provided Services: ICANN has developed detailed staffing plans for all services to ensure adequate administration and enforcement of its agreements, and for addressing needs the new environment. Particular focus is being paid to contractual compliance, IANA and other functions that formally interface with gTLD registries and registrars.

Creation of new systems: ICANN is creating new business systems that will contribute to its ability to administer this program. Examples include the TLD Application System, contractual compliance tracking, and root zone management automation.

B. The First Round is Limited in Delegation Rate And Incorporates Other Measures to Assure Root Zone Security and Stability

ICANN's paramount mission is to ensure the security, stability and resiliency of the Domain Name System. ICANN's technical community has reported that new gTLDs, in the numbers contemplated, represent no risk to the safe, stable operation of the Internet's root zone. In furtherance of its mission, ICANN has made commitments regarding the size and staging of the first round. \30\ ICANN also makes the following commitments:

\30\ While rates of 215-240 new gTLDs are expected over a one-to-two year period, it has been determined that the root zone servers can readily accommodate maximum rates of 1000 delegations per year. See October 2010 Root Zone Scaling reports are available at <http://www.icann.org/en/announcements/announcement-2-06oct10-en.htm>, and the public comment fora can be accessed from there as well. See also Letter from Jun Murai, Chair of RSSAC, <http://www.icann.org/en/correspondence/murai-to-board-25nov10-en.pdf> (25 November 2010).

The impact of first round delegations on root zone stability

will be studied.

Although extremely unlikely, if the root server system shows signs of stress, the process can quickly be halted to preserve stability, using dedicated communications and monitoring systems.

C. ICANN is Committed to a Second Round of the New gTLD Program, Taking into Account Community Comment

One of the initial policy recommendations arising out of the Generic Names Supporting Organization is that, "[t]his policy development process has been designed to produce a systemised and ongoing mechanism for applicants to propose new top-level domains. The Request for Proposals (RFP) for the first round will include scheduling information for the subsequent rounds to occur within one year. [Emphasis added.]" \31\

\31\ GNSO Summary of Policy Recommendations, at <http://gns0.icann.org/issues/new-gtlds/summary-principles-recommendations-implementation-guidelines-22oct08.doc.pdf>.

The application round opening on January 12, 2012 is for those entities that are ready to participate in the expansion of choice and innovation in the DNS. There are many who may not be ready, or want to view the progress of the first round prior to taking a decision. They should not feel compelled to participate in the first round--future opportunities will exist.

ICANN is working to identify a clearer timeline for the second round. We have heard the calls from many in the community that certainty in the timing of the second round will reduce some of the pressure to apply in the first. ICANN has agreed with governments and trademarks holders that a second round should occur only after:

Studying the impact of first round delegations on root zone stability.

Conducting a post-first round study on whether new trademark protections should be adjusted.

The first new gTLDs are expected to be operational in early 2013

and ICANN will undertake these studies at the earliest opportunity as is practicable--as soon as meaningful data is available.

D. Innovation and Jobs are Waiting

Many new businesses have been formed based on progress in implementing this Internet community-developed program. Some are potential applicants; some will "provision" applicants. For at least the past two years, future applicants have attended ICANN meetings, passing out marketing materials with their ".NEWDOMAIN" prominently displayed. Consulting businesses to advise applicants have arisen. Over 120 persons or entities have publicly announced their intention to apply for new gTLDs. Nearly 90 declared applicants have active websites marketing their new gTLD idea proposing all types of gTLDs--city names, community ideas, branding opportunities for internationally known corporations and others. American jobs are already being created, and more will be when the program becomes a reality.

We will never know the opportunities and creativity that will come through the introduction of new gTLDs will produce until we move forward. When ICANN was in its infancy, who could have predicted the online possibilities we take for granted today? Since 1999, the Internet has generated new companies and innovative ideas including marketplaces for commerce, communications and social networking: Facebook, Google and Twitter. New gTLDs hold that same potential for innovation.

VI. ICANN Is a Reliable Steward of the DNS

ICANN continues to accomplish much for the benefit of the global Internet community beyond the New gTLD Program. Recent achievements include:

A. Fulfilling the Affirmation of Commitments

On September 30, 2009, ICANN and the US Department of Commerce executed the Affirmation of Commitments, a landmark agreement. The Affirmation institutionalizes ICANN's technical coordination role and the US Government's commitment to the multi-stakeholder model. The Affirmation also sets out specific commitments on accountability, transparency and the interests of global Internet users; preservation of DNS security, stability and resiliency; promotion of competition, consumer trust and consumer choice; and enforcement of Whois policies. These commitments are woven into ICANN's ongoing work.

ICANN dedicates significant time and resources to meeting its commitments under the Affirmation and continues to build on the significant progress it has already made. The Affirmation is not just a reflection of the Department of Commerce's commitment to the multi-stakeholder model; it is ICANN's commitment to the global Internet community to operate with greater accountability and transparency.

What has ICANN achieved to date?

In coordination with the community, ICANN has initiated the three reviews called for in the Affirmation: Accountability and Transparency; Security and Stability; and Whois.

Within weeks of completion of the public comment period on the Final Report of the Accountability and Transparency Review Team (ATRT),^{\32\} staff completed detailed implementation plans to meet the recommendations. The Board has decided that all recommendations should proceed to implementation, and the committees of the Board have been active in oversight of ATRT implementation.

^{\32\} The ATRT Report is available at <http://www.icann.org/en/reviews/affirmation/activities-1-en.htm>.

ICANN is now:

Publishing translations of Approved Resolutions for all Board meetings and of the Minutes of Board meetings.

Developing and posting the rationale for Board actions. This includes rationales for all new gTLD-related actions in 2011, including the Board's decisions on Registry-Registrar Cross Ownership, and the Completion of Economic Studies, and eight additional rationale papers produced to accompany approval of the New gTLD Program.

Posting Board Briefing Materials along with the Minutes of each Board meeting, as well as Guidelines for the Posting of Board Briefing Materials to better explain the redaction process.

Using a standardized public comment template to allow for easier understanding and identification of the items posted for comment.

Refining the public comment process to allow for comment and reply cycles.

Consulting with the Governmental Advisory Committee on implementation of GAC-related ATRT recommendations, including work to create a publicly-accessible registry of GAC advice.

Including a template for the submission of Reconsideration Requests, as well as maintaining clearer status of Reconsideration Request ICANN's website.

Continuing to evaluate the work of an Independent Valuation Expert regarding Board-member compensation (an ATRT recommendation).

Designing the appropriate scope of an independent expert review of ICANN's accountability mechanisms.

ICANN is committed to meeting all of its commitments under the Affirmation of Commitments, and will continue to report on the status of that work through the ICANN website.

B. Conflicts of Interest Policy Refinements and Enhancing ICANN's Ethical Culture--Towards a Gold Standard

ICANN maintains a strong policy regarding the identification and handling of Board member conflicts of interest, as well as a Code of Conduct setting out the ethical standards to which Board members are expected to adhere.^{\33\} In addition, all ICANN staff are bound by a conflicts of interest policy. Prior to the June 2011 approval of the New gTLD Program, ICANN's President and CEO issued a public call that the era of New gTLDs requires ICANN to be even more vigilant in addressing conflict of interest issues.

^{\33\} For an example of the application of the Conflict of Interest policy within the New gTLD Program deliberations, Board members and Liaisons regularly identify particular areas of interest that require the members to refrain from voting on issues, or refrain from participating in deliberations, as reported at <http://www.icann.org/en/minutes/minutes-25sep10-en.htm>.

Work is now well underway with towards strengthening conflicts and ethics practices. ICANN intends to meet or create a gold standard for not-for-profit organizations. This work includes: (1) review of Conflicts of Interest Policy and Code of Conduct by one of ICANN's main outside counsel, to identify proposed revisions; (2) a review of ICANN's Conflicts of Interest Policy, Code of Conduct and other governance documents by new counsel who are expert in governance issues; and (3) compiling a panel of international ethics experts to recommend enhancements to ICANN's ethical culture after a review of standards from similar organizations from around the world.

The ICANN Board is also voluntarily adopting a stricter conflicts of interest practice for New gTLD-related decisions, and staff are subject to restrictions regarding contact with potential New gTLD applicants. They are prohibited from accepting any gifts, meals or entertainment from potential New gTLD applicants.

C. Registrar Accreditation Agreement Amendments

ICANN and its accredited registrars are currently negotiating a series of amendments, many addressing concerns raised by law enforcement authorities from around the world. The negotiation team has agreed to a demanding schedule to achieve a set of amendments for consideration at ICANN's next public meeting in March 2012. The team has already agreed in principle to the incorporation of some of the heightened protections that will be imposed on registry operators within the New gTLD Program, such as the maintenance of an abuse point of contact. All of the newly adopted and heightened consumer and law enforcement protections will be in place in time for the launch of the first new gTLDs.

The negotiations team is providing regular updates on the status of negotiations, available at <https://community.icann.org/display/RAA/Home>.

D. Internationalized Domain Names

In October 2009, ICANN approved the IDN ccTLD Fast Track Process through which countries and territories around the world can apply for TLDs in character sets other than Latin-based script.^{\34\} Through this

process, 30 IDN ccTLDs are now available on the Internet with more on the way. This has opened the Internet to additional billions in China and India alone.

\34\ The IDN ccTLD Process was created after consultation and planning with the ccNSO (Country Code Names Supporting Organization) and the GAC.

\35\ These IDN ccTLDs represent 20 countries and territories. Due to language difference in country, for example, India has IDN ccTLDs delegated in seven separate scripts.

E. DNSSEC

The Internet is becoming more secure. Following years of development and testing, on July 15, 2010, ICANN, in partnership with VeriSign and the US Department of Commerce, published the root zone trust anchor and a signed root zone became available.\36\ The implementation of DNSSEC (or DNS Security Extensions) will allow Internet users to know with certainty that they have been directed to the website they intended. This technology will help eliminate a whole class of security threats to the Internet.

\36\ Information on DNSSEC deployment can be found at <http://www.root-dnssec.org/>.

ICANN is in active engagement with all registry operators to encourage adoption. As a result, over 75 gTLDs and ccTLDs now deploy DNSSEC; most significantly, the .COM registry adopted DNSSEC on March 31, 2011. DNSSEC will be mandatory in all new gTLDs.

ICANN's work as the DNSSEC Root Zone Key Signing Key (RZ KSK) Manager recently achieved an unqualified SysTrust Certification following an audit to ensure appropriate internal controls are in place to meet the availability, processing integrity and security objectives for the RZ KSK System. ICANN will renew its certification annually.

F. Root Zone Management Automation

In performance of the IANA Function Contract, ICANN has partnered with VeriSign and the Department of Commerce to automate changes to the root zone. The root zone holds the authoritative directory of top-level domains. This automation will make the processing of change requests more efficient, and will enable all who participate in the change process to be better prepared for the increase in root zone changes that will occur through the New gTLD Program.

G. Continued Enforcement of Registrant Protections

Another achievement for the benefit of the global Internet community is the continuous improvement in contractual compliance work. ICANN remains vigilant in its contractually-based consumer protection work and has strengthened the compliance team. The contractual compliance team is now comprised of 8 members, proficient in multiple languages, which has increased capacity as well as ICANN's ability to communicate with its diverse group of contracted parties on compliance-related matters.

Since 2008, ICANN has either terminated or denied renewal of 43 accredited registrars, and issued thousands of compliance notices.

Other significant progress includes the relatively recent implementation of registrar data escrow where all registrar data is escrowed by ICANN so that in the event of a registrar failure or termination, the data can be transferred to a successor registrar in order to protect registrants and their web sites. Over 99% of gTLD registrations are covered by ICANN's registrar data escrow agreements.

ICANN continues to explore ways to identify registrar noncompliance early, take action swiftly to bring registrars back into compliance and terminate those that undermine the domain name registration process. This compliance activity helps ensure a healthy Internet ecosystem.

In early 2011, ICANN enhanced its Whois Data Problem Report System (WDPRS), a system that contributes to Whois accuracy.

VII. Conclusion

The ICANN community has worked tirelessly to create a New gTLD Program that will introduce competition and innovation at the top level of the DNS. Thousands of pages have been carefully written, balancing expert analyses, independent study, and thousands of comments. Governments have provided advice; professionals have weighed in. The new gTLD implementation program represents opportunities for innovation and enhanced competition, with a future of stronger rights protections, stronger consumer protections, and measured paths forward to future rounds.

Thank you for the opportunity to address this Committee. I look forward to answering any questions that you have during the hearing.

Senator Klobuchar. Thank you very much.
Ms. Williams.

STATEMENT OF ANGELA F. WILLIAMS, GENERAL COUNSEL, YMCA OF THE USA

Ms. Williams. Good morning, Senator Klobuchar. Thank you so much for having us testify this morning. I'm Angela Williams, General Counsel of YMCA of the USA. As you know, the YMCA is the nation's leading nonprofit committed to strengthening communities through youth development, healthy living, and social responsibility. Last year, in 10,000 communities our Ys served 21 million people, of whom 9 million were young people, and we serve them in every Congressional district in this great country. Thank you all for your many years of support to our local Ys.

I'm here today to speak on behalf of the Not-for-Profit Operational Concerns Constituency, known as NPOC, which is the newest constituency formed under ICANN to give not-for-profits and NGO's a voice in Internet governance. Our diverse membership includes groups within the United States, such as American Red Cross, St. Jude's Children's Hospital, Church of God in Christ, World Wildlife Federation, Human Rights Campaign, and Goodwill Industries International. Internationally, our members range from the Association of NGO's in Gambia to the International Baccalaureate Organization in Switzerland and many others.

The NPOC members, like most not-for-profits, increasingly rely on the Internet to fulfil our missions as well as to raise funds. We share a growing concern that our ability to carry out our collective missions due to the enormous cost and financial burdens of the proposed structure of the new Generic Top-Level Domain Name Program will pose severe hardship and burdens on each of us.

The new gTLD program compromises use of the Internet by increasing the risk of fraud, cybersquatting, and trademark infringement, and by significantly escalating the cost to protect against such unlawful activities. I know firsthand at the Y that our local organizations have been hit hard by the economy. Our name and reputation is priceless. Yet these additional costs to protect them are now out of financial reach.

It is the goal of our organizations to educate all those responsible for implementation of the new gTLD program about unintended consequences. There is no doubt it will have a crippling effect upon my organization and most other not-for-profit organizations here and around the globe in its current form.

Let me speak to our budgetary concerns. The ultimate cost in proceeding through the entire application process alone could reach several hundred thousands of dollars. Currently the ICANN website quotes costs for one new gTLD application to be approximately \$185,000, with an annual cost thereafter of at least \$25,000 for a required 10-year term. This does not include the legal fees required to prepare the application and certain amounts required to be in escrow.

If the Y or another NPOC member chooses not to participate in the new gTLD program, it runs the risk that another entity will apply for use of its name or one that is confusingly similar. The costs for filing an objection are expected to be approximately \$30,000 to \$50,000.

ICANN's new gTLD program does not provide special or discounted protection measures for not-for-profit organizations to protect their brands and avoid the public confusion that results from their unauthorized use. YMCA of the USA currently employs 1.5 full-time employees at a cost of \$225,000 annually, in addition to external legal expertise at a cost of over \$100,000 just this year, in an effort to monitor and protect the use of its trademarks. Many other not-for-profit organizations cannot afford this expense to protect their name and goodwill. The increase of new gTLDs will further exacerbate this problem.

If not-for-profit organizations cannot afford to register the domain names in the first place, they certainly will not have the means to take legal action, nor should they, as their funds are better served fulfilling their mission. Our country's diverse 1.5 million not-for-profits share one central commitment: improving lives. I ask each of you to think about the small and large not-for-profits that work alongside government, our work on most, if not all, of our nation's greatest problems. I ask you to look at this issue through the lens of the not-for-profit organizations who are using limited

resources to do much good.

Thank you.

[The prepared statement of Ms. Williams follows:]

Prepared Statement of Angela F. Williams, General Counsel,
YMCA of the USA

Good morning Chairman Rockefeller and Ranking Member Hutchison and Committee Members. I'm Angela Williams, General Counsel for the YMCA of the USA. As each of you know, the YMCA is the Nation's leading nonprofit committed to strengthening communities through youth development, healthy living and social responsibility. We work side-by-side with our neighbors in more than 10,000 communities to make sure that everyone, regardless of age, income or background, has the opportunity to learn, grow and thrive. Last year, our Ys served 21 million people--about 9 million were youth--and we serve them in every congressional district in this great country. Thank you all for your many years of support of local Ys in your district. I know you all have a long history with the Y!

I'm here today to speak on behalf of the Not-for-Profit Operational Concerns Constituency known as NPOC, which is the newest constituency formed under ICANN to give not-for-profits and NGOs a voice in Internet governance. Our diverse membership includes groups within the United States such as American Red Cross, St. Jude's Children's Research Hospital, World Wildlife Federation, Church of God in Christ, Human Rights Campaign and Goodwill Industries International. Internationally, our members range from the Association of NGOs in Gambia to the International Baccalaureate Organization in Switzerland and many others.

The NPOC members, like most not-for-profits, increasingly rely on the Internet to fulfill our missions as well as to raise funds. We share a growing concern that our ability to carry out our collective missions due to the enormous cost and financial burdens of the proposed structure of the new Generic Top-Level Domain Name Program ("new gTLD Program") will pose severe hardship and burdens on each of us. We also share concern about the increased risk of public confusion, often unique to not-for-profit organizations, resulting from unauthorized use of organizational trademarks. I know firsthand at the Y that our local organizations have been hit hard in this economy. Our name and reputation are priceless, yet these additional costs to protect them are now out of financial reach.

The new gTLD Program compromises use of the Internet by increasing the risk of fraud, cybersquatting, and trademark infringement and by significantly escalating the cost to protect against such unlawful activities. The following are areas of particular concern:

domain name registration

the introduction of new top level and second level domain names into the DNS (Domain Name System)

fraud and abuse, and

using the Internet platform to distribute and collect mission-related information for our members and the communities we serve.

It is the goal of our organizations to educate all those responsible for implementation of the new gTLD program about unintended consequences. There is no doubt it will have a crippling effect upon my organization and most other not-for-profit organizations here and around the globe in its current form.

Budgetary Concerns

I'd like to begin with our budgetary concerns.

The ultimate cost in proceeding through the entire application process alone could reach several hundred thousands of dollars. Currently, the ICANN website quotes costs for one new gTLD to be approximately \$185,000 to file an application, with an annual cost thereafter of at least \$25,000 for a required ten-year term. This does not include the legal fees required to prepare the application and certain amounts required to be in escrow. Moreover, there are many additional potential costs. For example, if an application is filed and then placed into an extended evaluation by ICANN, the applicant may have to pay an additional \$50,000. An applicant may be required to defend its application against objections, which range from \$1,000 to \$5,000 in filing fees per party per proceeding, and an additional \$3,000 to \$20,000 in costs per proceeding, which must be paid up front.

If the Y or another NPOC member chooses not to participate in the new gTLD program, it runs the risk that another entity will apply for use of its name or one that is confusingly similar. In the event

another entity applies for a top-level domain that contains the organization's name, the costs for filing an objection are expected to be approximately \$30,000-\$50,000.

While processes such as these may be useful in the commercial space, not-for-profits simply do not have the resources to participate, and will certainly not be able to compete against for-profit organizations with large budgets and reserves for intellectual property protection. Our sector not only prefers to, but must, use our monies to provide critical services to our communities. We simply cannot afford thousands of dollars to become a domain name registry solely to ensure brand protection. Becoming a domain name registry is not part of the mission of any not-for-profit organization, yet protection of its reputation is critical. ICANN's new gTLD Program does not provide special or discounted protection measures for not-for-profit organizations to protect their brands and avoid the public confusion that results from their unauthorized use. YMCA of the USA currently employs 1.5 full-time employees at a cost of \$225,000 annually, in addition to external legal expertise at a cost of over \$100,000 this year alone, in an effort to monitor and protect the use of its trademarks. Many other not-for-profits cannot afford this expense to protect their name and goodwill. The increase of new gTLDs will further exacerbate this problem.

The primary enforcement mechanism of the new gTLD Program is the Trademark Clearinghouse, where trademark owners can protect their registered trademark rights. The new gTLD Program is due to be rolled out in less than 40 days. At this point, the cost of listing marks in the Clearinghouse has not been set, creating more uncertainty about the actual costs associated with the new gTLD Program.

This process will only apply to exact matches of trademarks, rather than common misspellings, etc. that fraudsters and cybersquatters often use to deceive and confuse Internet users attempting to locate a particular not-for-profit. Not-for-profits are not in a financial position to register their marks using hundreds of additional gTLDs, particularly at premium prices. Trademark owners will not be allowed to preemptively register marks that are nearly identical.

If not-for-profit organizations cannot afford to register the domain names in the first place, they certainly will not have the means to take legal action, nor should they, as these funds are better served fulfilling their humanitarian, philanthropic, education, academic, religious, community-based, promotion of the arts, public interest policy advocacy, health-related services and social inclusion missions. Public Confusion and Cybersquatting Concerns

Our ability to ensure that the public knows and trusts the public face of the Internet for all of our organizations is paramount. The public trusts the high-quality, reliable services they have come to associate with these organizations.

Bad actors in the domain name space such as cybersquatters, fraudsters, and others, who register and use domain names in bad faith to profit off of the goodwill of well-known entities, have existed for many years in the existing domain name space. Recently one of our organizations, a large and historic organization, learned that an unauthorized entity was using its name to fundraise online and in the community. The result was confusion by potential funders about which organization was seeking donations. This is a common example of how our organizations are impacted by trademark infringement.

The likely increased public confusion and fraud that will occur in the new gTLD space will be particularly devastating for not-for-profit organizations. If not-for-profit organizations are not able to adequately protect their names and trademarks in the new gTLDs, bad-faith domain name registrants will be able to register and make use of hundreds of domain names that are identical or similar, and to disseminate dangerously false information to

Internet users. This will greatly increase the likelihood that the public will be misled in a manner that is both financially devastating and dangerous to the reputation of those organizations--making it difficult for them to achieve their worthy missions.

Our country's diverse 1.5 million not-for-profits share one central commitment: improving lives. The ability to fund and focus on this important work will be diverted, and the public will suffer as a result of the new gTLD Program. Current protection mechanisms built into the new gTLD Program are not adequate and are expensive for those not-for-profits that wish to take advantage of them. The NPOC is understandably concerned about the impact on not-for-profit organizations that do not have the budget to enforce their rights in the current space, much less if that space were to increase ten-fold. The expense of the new gTLD Program would greatly divert funds from our central commitment to improve lives.

Recommendations

Our fears are not alone. There has been a ground-swell of Internet

stakeholders, including the largest for-profit companies that have repeatedly expressed concerns about the program beginning in January 2012 when so many vital issues remain unresolved.

Therefore, we ask that there continue to be input from stakeholders, and careful consideration of the impact of this program on the Internet, and particularly on not-for-profits. Among the numerous requests the NPOC has made to ICANN, we bring the following to your attention:

That verified not-for-profit organizations be permitted to exempt their trademarks from any other applicant in the new gTLD Program at no cost, or if that is not possible, then at a drastically reduced fee;

That the mechanisms for trademark protection be significantly strengthened, with the ability to proactively protect trademark owners before any application is accepted; and

That the costs to participate in the new gTLD Program for verified not-for-profit organizations be eliminated, or if not possible, then at a drastically reduced fee.

In summary, thank you for your time and attention. I know that in Health Care Reform you heard the concerns of small not-for-profits and provided the same "claw back" for health insurance premiums for small not-for-profits as you have for small business. Time and again this committee has shown interest and common sense in protecting our precious not-for-profit sector from tremendous financial burden that will inhibit our ability to achieve our missions. I ask each of you to think about all the small and large not-for-profits that make our country and our world a better place to call home; our work alongside government; our work on most, if not all, of our nation's greatest problems. I ask you to look at this issue through the lens of the not-for-profit organizations in this country who are using limited resources to do much good.

Chairman Rockefeller. You're still Chairman.
Senator Klobuchar. Mr. Jaffe.

STATEMENT OF DANIEL L. JAFFE, EXECUTIVE VICE
PRESIDENT, GOVERNMENT RELATIONS,
ASSOCIATION OF NATIONAL ADVERTISERS (ANA)

Mr. Jaffe. Mr. Chairman, Senator Klobuchar: I am Dan Jaffe and I am Executive Vice President, Government Relations, for the Association of National Advertisers, and we very much appreciate the opportunity to testify on behalf of ANA and CRIDO, the Coalition for Responsible Internet Domain Oversight. CRIDO is a coalition of 152 major national and international companies and trade associations united in opposing the virtually unlimited rollout of ICANN's new generic Top-Level Domain name (gTLD) program.

The members of the coalition, CRIDO, include many of the world's largest companies, with thousands of brands that consumers know and trust. They represent virtually every sector of the American and international economies. These are the companies which provide the economic foundation for the global marketplace we all use and enjoy.

ICANN's decision to embark on an explosive expansion of top-level domains is a very significant and fundamental decision, with implications for everyone in the entire Internet ecosystem, from marketers, to consumers, to charities, NGO's, law enforcement agencies, even politicians, and in fact anyone who has brand names to protect.

The ICANN program is not merely a bad policy choice, but a serious threat to the legitimate interests of both companies and consumers on the Internet. We believe both the decision and the process ICANN followed are fundamentally flawed, and here are the reasons.

First, the immediate costs imposed on business is likely to be in the multi billions of dollars. Some of that is estimated that for a typical company the cost of acquiring a single new gTLD and managing it could easily exceed \$2 million. Companies that are forced into an auction with another interested applicant will potentially face far higher costs. As many companies have hundreds or even thousands of brands to defend,

it's easy to see how these costs will spiral upward.

Even ICANN's own economists recognize that an unlimited expansion of gTLDs could cause serious economic harm to marketers. For example, ICANN's own Phase Two Report noted that brand owners may be compelled to file, "numerous defensive registrations to protect trademarks or intellectual property rights from misuse." These resources could be far more effectively used for job creation and productive capital investment.

Second, ICANN's protections for consumers in the gTLDs program are woefully inadequate. Again, ICANN's own economic experts know that one of the most serious and costly challenges to the unlimited expansion of gTLDs was the harm to consumers from increased cybersquatting and related malware, phishing, and the unknowing purchase of counterfeit goods. In 2009 a coalition of law enforcement agencies including the U.S. Department of Justice and the FBI issued a set of law enforcement due diligence recommendations for ICANN. These recommendations were intended to help prevent against cyber security threats. However, according to a communique from ICANN's own governmental advisory committee dated October 27, 2011, not one of law enforcement's 12 recommendations has been adopted. And yesterday FTC Chairman Jon Leibowitz, testifying before a House Judiciary subcommittee, stated that the unlimited gTLDs rollout could be a "disaster for business and consumers," and could dramatically increase problems for law enforcement.

Third, we have serious concerns about the potential major conflicts of interest involving both the board and staff of ICANN. It is very troubling that many of the same individuals who approved the unlimited rollout of the gTLD program, including ICANN's former chairman, now stand to benefit substantially from the expansion program.

These are not just our concerns. The full European Commission and ICANN's own governmental advisory committee have expressed, "extreme concern about the inadequacy of the existing rules of ethics and conflicts of interest."

We believe that the Affirmation of Commitments that ICANN agreed to in order to obtain the freedom to manage major functions of the Internet from the Department of Commerce are real commitments. They must not be allowed to become merely meaningless high-sounding platitudes. This means that all Internet participants, and in particular the Department of Commerce, must take whatever steps are necessary to assure that the Top-Level Domain policy is fully justified on a cost-benefit basis and provides strong and adequate protections for businesses, NGO's, and consumers, thereby furthering the public interest. That is simply not the case today.

We hope that this hearing places a spotlight on these issues and will help to begin the process of careful reevaluation of this misguided ICANN Top-Level Domain initiative.

Thank you very much for your attention.

[The prepared statement of Mr. Jaffe follows:]

Prepared Statement of Daniel L. Jaffe, Executive Vice President,
Government Relations, Association of National Advertisers (ANA)

The Association of National Advertisers (ANA) appreciates the opportunity to present our serious concerns about the new generic Top-Level Domain Name (gTLD) Program that was approved last June by the Internet Corporation for Assigned Names and Numbers (ICANN).

ANA is the advertising industry's oldest trade association, founded in 1910. Our membership includes 400 companies with 10,000 brands that collectively spend over \$250 billion in marketing communications and advertising. More information about our association is available at <http://www.ana.net>.

I am also appearing on behalf of CRIDO, the Coalition for Responsible Internet Domain Oversight. CRIDO represents 152 major national and international companies and trade associations that have joined together to oppose the roll-out of ICANN's new gTLD Program. A list of all of the members of CRIDO, which represent virtually every sector of the American economy and many important international companies, associations and federations, is attached to this statement. CRIDO members represent some 90 percent of global marketing communications spending, equivalent to \$700 billion annually. While CRIDO members may follow different approaches to domain name activity, they are all united in the belief that the proposed unfettered expansion of generic Top Level Domains is both dangerous and misguided. This proposed ICANN initiative is not merely a bad policy

choice but a serious threat to the legitimate interests of business and consumers on the Internet.

\1\ See Exhibit A.

On November 10, 2011, ANA and the other members of CRIDO sent a Petition to Commerce Secretary John Bryson outlining our serious concerns about the new gTLD Program approved last June by ICANN despite significant objections from many global Internet stakeholder groups. The CRIDO Petition called on the Department of Commerce, and specifically the National Telecommunications and Information Administration (NTIA), ``to use its best efforts to persuade ICANN to stop or postpone the opening of the gTLD application window," which is currently scheduled to begin on January 12, 2012.\2\

\2\ The Petition is attached as Exhibit B.

Other important groups have also independently spoken out against ICANN's gTLD Program, including the National Retail Federation (NRF), the Screen Actors Guild (SAG) and the American Federation of Television and Radio Actors (AFTRA). Their letters to the Secretary are available at <http://www.ana.net/getfile/16997> (NRF), <http://www.ana.net/getfile/16998> (SAG) and <http://www.ana.net/getfile/17000> (AFTRA).

We commend the Committee for holding this hearing on this critical issue which could impact the shape of the Internet for decades, and perhaps in perpetuity. In the past twenty years, the Internet has grown from being used by a limited number of engineering and academic elite to being relied on every day by over 2 billion people worldwide. According to a May 2011 report from the McKinsey Global Institute, nearly \$8 trillion are exchanged annually through e-commerce. The former Secretary of Commerce, Gary Locke, emphasized that ``[t]he Internet is becoming the central nervous system of our information economy and society." \3\ Since the Internet serves as a recognized catalyst for global economic growth, there is far too much at stake, particularly in today's economic climate, not to ensure that ICANN's policies are fair and impartial. This is in keeping with the promises that ICANN made in the Affirmation of Commitments between ICANN and the NTIA, in exchange for the considerable power to oversee the Internet that was delegated to ICANN by the U.S. government.

\3\ Commercial Data Privacy and Innovation in the Internet Economy: a Dynamic Policy Framework, Department of Commerce (2010), Message from Secretary of Commerce Gary Locke at 1, available at: <http://www.commerce.gov/sites/default/files/documents/2010/december/iptf-privacy-green-paper.pdf>.

We believe the new gTLD Program is bad for marketers, consumers and the entire online marketplace. Consistent with the Affirmation of Commitments, ICANN has a responsibility to ensure that its actions further the public interest, promote consumer trust and the burgeoning Internet domain.\4\

\4\ See <http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm>. (In relevant part,

Section 3(a) requires ICANN to ``ensure that decisions made related to the global technical coordination of the DNS are made in the public interest and are accountable and transparent";

Section 3(c) requires ICANN to ``promote . . . consumer trust . . . in the DNS marketplace" and Section 8(c) commits ICANN to operating ``as a multi-stakeholder, private sector led organization with

input from the public, for whose benefit ICANN shall in all events act.").

We strongly believe that ICANN's new gTLD Program fails all of these standards.

This Program in aggregate has multi-billion dollar implications for all marketers, both in the commercial and the nonprofit sectors, and their brands. It would cause irreparable harm and damage to the entire online business community. It would throw the domain name universe into substantial confusion for both marketers and consumers.

ICANN has been considering this Program for several years. ANA objected to these proposals as did many other industry groups and companies. Even important governmental entities, including international law enforcement organizations,\5\ expressed deep misgivings about ICANN's proposed gTLD Program. Unfortunately these

strong objections have largely fallen on deaf ears.

\5\ In 2009, a coalition of law enforcement agencies including the Australian Federal Police; the U.S. Department of Justice; the U.S. Federal Bureau of Investigation; the New Zealand Police; the Royal Canadian Mounted Police and the United Kingdom's Serious Organized Crime Agency issued "Law Enforcement Due Diligence Recommendations for ICANN." It is our understanding from the GAC Communique at Dakar, dated October 27, 2011, that none of law enforcement's recommendations has been adopted; in fact of the 12 recommendations registrars were only able to report on their consideration of three of the twelve law enforcement recommendations. GAC Communique--Dakar attached hereto as Exhibit C.

ICANN consistently states that it is a multi-sectoral, bottom-up policy development organization. However, the creation of a massive bureaucratic labyrinth and process does not mean that ICANN is, in fact, representing the views of the majority of the Internet community. There clearly is not "consensus" support for the ICANN gTLD proposals. We cannot let the repetitive mantra that ICANN is a "multi-sectoral organization" camouflage or mask ICANN's lack of responsiveness to the real concerns of a very broad cross-section of the business community, and a growing group of non-governmental organizations, consumer groups and other Internet users.

Key Reasons Why the ICANN Program Must Be Stopped or Delayed

For a variety of reasons, we believe it is critical that the roll-out of the new gTLD Program be delayed.

Flawed Justification: ICANN justifies the Program on grounds that it: "might" or "may" (1) spur competition, (2) relieve scarcity in domain name space and (3) support differentiated services and new products. Yet evidence is sorely lacking that the introduction of new TLDs will actually achieve any of these goals. The very reports relied upon by ICANN to buttress its gTLD proposal prove that such justifications are unsupportable.

Competition. Regarding competition, in the December 2010 report commissioned by ICANN, entitled "Economic Considerations in the Expansion of Generic Top-Level Domain Names, Phase II Report: Case Studies" ("Phase II Report"),⁶ the authors of the Phase II Report clearly conclude that the introduction of new undifferentiated gTLDs is not likely to have a "significant competitive impact" in the market for registry services (Phase II Report, para. 12).

\6\ Michael L. Katz et al., Economic Considerations in the Expansion of Generic Top-Level Domain Names Phase II Report: Case Studies (2010) <http://www.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>. See also, Michael L. Katz et al., An Economic Framework for the Analysis of Expansion of Generic Top-Level Domain Names (2010), <http://www.icann.org/en/topics/new-gtlds/economic-analysis-of-new-gtlds-16jun10-en.pdf>; Michael L. Katz et al., Reply to Comments on An Economic Framework for the Analysis of the Expansion of Generic Top-Level Domain Names (2010 [sic]) <http://www.icann.org/en/topics/new-gtlds/analysis-response-economic-framework-21feb11-en.pdf>; Michael L. Katz et al., Reply to Comments on Economic Considerations in the Expansion of Generic Top-Level Domain Names Phase II Report: Case Studies (2011) <http://www.icann.org/en/topics/new-gtlds/analysis-response-phase-ii-report-21feb11-en.pdf>.

Scarcity. It is equally clear that scarcity is not a current problem. As the Phase II Report concludes, ". . . [T]he relief of name scarcity is unlikely to be the principal source of social benefits derived from new gTLDs" (Phase II Report,

para. 20).

Differentiated Services and New Products. The Phase II Report notes new domain uses that are possible with TLDs, comparing such prospects to existing TLDs, e.g., domains that are restricted to particular functions or applications (such as existing TLD .mobi), domains that restrict second level registration to a particular class of owners (such as existing TLDs .museum, and .aero), and domains that restrict second-level registration to presenting a certain type of content (such as current domains relating to a specific geographic area). However, in each case, the experts conclude that the benefits were little more than speculative and that many of the TLDs adopted by ICANN in the last expansion round have been practical failures (Phase II Report, para. 39, 50, 58, 59,

62).

There is no demonstrable need to increase generic Top Level Domain names on an unlimited basis, and no likely benefit that would result from such an unrestricted increase.

A wide array of 22 suffixes such as ".biz," ".info," ".jobs," ".travel" and ".museum" currently exist, not including the country codes. Most of those gTLD names are minimally used, but nonetheless actively policed by brand owners concerned about trademark dilution, cybersquatting and the online sale of pirated or counterfeited products.⁷ The gains assumed by ICANN are completely unsubstantiated. In contrast, the new Program will throw the domain name universe into widespread confusion, impose major costs on marketers and cause harm to consumers. If there is no scarcity of space within the existing domain name system, the ICANN Program appears to be a solution in search of a problem. Even more seriously, the "solution" proposed by ICANN is likely to impose enormous costs on the Internet and divert productive resources at a time where these dollars could be far more effectively used for job creation and productive capital investment.

⁷ For further background on the online piracy and counterfeiting arguments, see Mark Monitor, Traffic Report: Online Piracy and Counterfeiting (January 2011) (The study used only 22 brands and found that for those brands online distribution of pirated digital content and e-commerce sales of counterfeit goods were rampant).

Serious Economic Impact if the Program is Adopted

These are not just our views. The studies ICANN initiated itself recognize that the Program may cause several severe economic harms. As set forth in Paragraph 63 of the Phase II Report, the costs of the Program may include the following:

Misappropriation of Intellectual Property. The experts cite a key concern of misappropriation of intellectual property rights, including the "costs of domain watching, defensive registrations, litigation or other measures to end misappropriation, and costs due to misappropriation that is not blocked (e.g., lost profits due to sales of counterfeit goods or brand dilution)."⁸

⁸ Michael L. Katz et al., Economic Considerations in the Expansion of Generic Top-Level Domain Names Phase II Report: Case Studies (2010) at para. 63, <http://www.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>.

Defensive Registrations. As noted, brand owners may be compelled to file defensive registrations, i.e., "registrations undertaken to protect legitimate trademark or intellectual property rights from misuse, not registrations undertaken as the 'defense' of one's business against increased competition on the merits."⁹ This cost alone could be in the hundreds of thousands of dollars per brand name, creating a multi-million dollar liability for major corporations and a multi-billion dollar cost to the industry.

⁹ Id.

Several Internet Domain name sellers have estimated the range of costs for gTLD applications alone. For example, in an article entitled, "Sweeping Away Confusion Regarding gTLD's," Gretchen Olive stated that, "Those applying will need a minimum of \$800,000 to \$1 million to not only submit the application, but also to defend it against objections lodged by third parties and to get through the contract process with ICANN and set up the registry technical infrastructure (emphasis added)."¹⁰ The article further noted that, "Monitoring for infringement and submission of objections will likely run most organizations between \$25,000 and \$50,000 in 2012."¹¹

¹⁰ Gretchen Olive, Sweeping Away Confusion Regarding gTLDs, ADOTAS (Nov. 8, 2011) available at: <http://www.adotas.com/2011/11/sweeping-away-confusion-regarding-gtlds/>.

¹¹ Id.

Domain Navigation Dilution because Consumers have More Places to Look. The experts note that the "introduction of additional gTLDs may increase the costs of Internet navigation by increasing the number of potential domains over which a user

may search. To the extent that such effects arise, they can dilute the value of existing domain names as navigation devices. The costs associated with such dilution include the costs of defensive registrations. . .and the costs due to dilution that cannot be mitigated." \12\

\12\ Id. at note 6, supra (Phase II Report).

Harm to Internet Users from Increased Cybersquatting. One of the most incipient and costly challenges to the adoption of any new gTLD is the prospect of cybersquatting and the substantial costs associated with preventing and policing it, which are already well into the billions of dollars. With respect to cybersquatting, the experts note, "In addition to harm in the form of increased search costs consumers may suffer more direct harm from increased cybersquatting. This direct harm may result from malware, phishing, and the unknowing purchase of counterfeit goods." \13\ While the experts opine that such a result "may" occur, history proves that cybersquatting will occur, just as it has with every TLD that has ever been administered by ICANN.

\13\ Id.

Reduced Investment by Intellectual Property Owners. The protection and development of intellectual property is a core value for the global economy, particularly given the world's reliance on technology. As ICANN's own experts conclude, the Program seriously undermines intellectual property rights-- "There may also be indirect harms from the loss of intellectual property owners' incentives to invest in that intellectual property due to concerns that some of the benefits of that investment would be misappropriated." \14\

\14\ Id.

Losses from Failed TLDs. History itself discredits ICANN's position that the introduction of new TLDs will increase innovation and competition. One need only look at the dismal financial registration and track record of TLDs like .museum and .aero to prove the point. Such failures are very disruptive and costly to companies that have registered. This reality is borne out by the authors of the Phase II Report, who conclude that "[i]f a new gTLD failed and ceased operation, external costs might be imposed on the Internet community. Registrants in a failed gTLD might be stranded, unable easily to move their websites (on which they may have based their business) to other TLDs due to embedded links. More generally, Internet users might face increased clutter on the Internet if links fail to resolve." \15\ Clearly, these types of dangers are likely to be substantially magnified by allowing an unrestricted proliferation and explosive growth of domains.

\15\ Id.

ICANN has in effect dismissed these concerns in reliance on what its own experts have noted as "speculative" competitive benefits of the Program. However, is it really credible that the broad group represented by the CRIDO membership--that includes some of the largest national and international advertisers, brand holders and associations in the world, with representation cutting across a vast range of industry sectors--can all be unable to foresee what are their true competitive interests?

ICANN's Deliberation Process is Flawed

Nevertheless, ICANN is now moving forward with the Program. ICANN justifies ignoring these studies in its report entitled, "Rationale for Board Decision on Economic Studies Associated with the New gTLD Program." \16\ With all due respect, the "Rationale" is nothing short of a nullification of ICANN's own mandate to conduct economic studies. Rather than calling for further expert analysis, ICANN dismisses the very economic evidence derived from the studies and opts for a default justification of "competition" in which any TLDs may be adopted. Furthermore, ICANN minimizes the Phase II Report's conclusion that registry competition will not be significantly affected by the Program; ICANN says its real interest is competition in business generally, and claims that any additional economic study on that subject would be futile.\17\ We understand that ICANN contemplates further studies once the new gTLD Program is underway,\18\ but at that point, the damage will have been done. Once new gTLDs are deployed, there is no turning back.

\16\ Available at www.icann.org/en/minutes/rationale-economic-studies-21mar11-en.pdf. See also ICANN Board Rationales for the Approval of the Launch of the New gTLD Program, available at www.icann.org/en/minutes/rationale-board-approval-new-gtld-program-launch-20jun11-en.pdf. Even in its final rationales, ICANN acknowledges that no determination could be made that the benefits of the new gTLD program will outweigh the costs.

\17\ See ICANN, Minutes of Board Meeting 25 January 2011, Economic Studies--<http://www.icann.org/en/minutes/minutes-25jan11-en.htm> ("[T]he Board has determined that no further commissioned economic studies could better inform the Board's decision." Id. at 8). See also ICANN, Rationale for Resolution 2011.01.25.22 (2011) at 1, <http://www.icann.org/en/minutes/rationale-economic-studies-21mar11-en.pdf>; see also Anthony Van Couvering, ICANN's Economic Study--It Depends, Minds + Machines Blog (Jul 21, 2010)(Commenting on the June 2010 Katz economic study Mr. Van Couvering said, "Should observers of ICANN lend any credence to this study? If your goal is to advocate a position without any empirical evidence, it is an excellent tool. If your goal is to understand what the new gTLD program will produce, it will, if printed out and bound, make a splendid paperweight").

\18\ <http://www.icann.org/en/minutes/minutes-25jan11-en.htm>.

If this Program, in fact, were likely to enhance competition and the Internet marketplace, one would expect broad statements of support for it. This support would come from many Internet and governmental sources. Instead, the voices that are speaking in favor of the Program appear to come almost exclusively from registrars, registries and others who will directly profit from facilitating the gTLD roll out--not those whom ICANN says will benefit. The broader Internet business community is clearly rejecting the proposal.

This scant and conflicting economic analysis is one of many examples in which ICANN has disregarded its own requirements and unilaterally issued an edict. ICANN's own Code of Conduct \19\ mandates that ICANN will "[w]ork to build consensus with other stakeholders in order to find solutions to the issues that fall within the areas of ICANN's responsibility. The ICANN model is based on a bottom-up, consensus driven approach to policy development." Its undertakings with the U.S. Department of Commerce additionally require that ICANN act rationally and transparently.\20\ Clearly, the legal and due diligence requirements of ICANN's own mandates have not been met here. An effort to foist on the world community and markets a change of this magnitude is not the measured "bottom up" approach described in the Code of Conduct. Moreover, it is impossible to describe the decision to adopt the Program as a decision based upon consensus where the research, comments and reports submitted to ICANN clearly show that there was and still is no consensus on the purported benefits of the Program.

\19\ <http://www.icann.org/en/documents/code-of-conduct-10jan08-en.pdf>.

\20\ ICANN's Code of Conduct at <http://www.icann.org/en/documents/code-of-conduct-10jan08-en.pdf>; see also, Affirmation of Commitments by the United States Department of Commerce and the Internet Corporation for Assigned Names and Numbers (September 30, 2009) at <http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm> ("ICANN commits to maintain and improve robust mechanisms for public input, accountability, and transparency so as to ensure that the outcomes of its decisionmaking will reflect the public interest and be accountable to all stakeholders by: . . . (c) continually assessing and improving the processes by which ICANN receives public input (including adequate explanation of decisions taken and the rationale thereof); (d) continually assessing the extent to which ICANN's decisions are embraced, supported and accepted by the public and the Internet community; and (e) assessing the policy development process to facilitate enhanced cross community deliberations, and effective and timely policy development").

Excessive Costs and Harms to Brands

The immediate cost imposed on businesses is likely to be in the billions of dollars. Applying for a new Top Level Domain name will require an extraordinarily expensive registration fee of \$185,000 as well as a minimum cost of \$25,000 paid annually to ICANN over the ten-year contractual commitment that successful applicants must make. Costs will further escalate at the second level of naming--the word to the left of the ".dot"--as brand owners will have to consider registering each of their brand-related terms, for either commercial or defensive purposes.

Some have estimated that, for a typical company, the cost of

acquiring a single gTLD and managing it over the initial commitment of ten years could easily exceed \$2 million, including expenses for the application process, operations, disputes, and related legal services. The costs associated with trademark monitoring and protection in all the new gTLD spaces will run even higher. Some CRIDO members spend over \$1 million a year today to enforce against cybersquatting and fraud in the existing 22 gTLD spaces. These numbers will clearly escalate if ICANN's proposal goes forward. In addition, many companies may face an auction for a generic Topic Level Domain, which will result in higher costs to ICANN's benefit. Many companies have hundreds or even thousands of brands to defend. Brand owners will face a Hobson's choice of either being compelled to spend substantial resources to acquire and manage new gTLDs or risk the harm to their brands that could occur if they take no action. This has certainly been the message spoken loud and clear to us from our members and the many groups within CRIDO.

Following the Money

Existing and prospective Internet registries and registrars stand to be the primary beneficiaries of the new gTLD Program. Just examining ICANN's own financial statements, it would appear that registries and registrars pay fees that comprise the lion's share of ICANN's budget. According to ICANN's own audit reports for the Fiscal Year 2011, ICANN's primary source of revenue comes from Internet registries and registrars. In fact, of ICANN's \$69.3 million in revenue for Fiscal Year 2011, \$64.5 million came from fees paid by registries and registrars.²¹ That is 93 percent of ICANN's 2011 revenue. In 2010, that same figure was 94 percent.²² Looking ahead to this new gTLD program, more TLDs mean new business for registries and registrars and greater numbers of registries and registrars, which in turn creates more fees for ICANN.

²¹ See Report of Independent Auditors and Financial Statements for the Internet Corporation for Assigned Names and Numbers, prepared by Moss-Adams LLP June 30, 2011 and 2010, available at: <http://www.icann.org/en/financials/financial-report-fye-30jun11-en.pdf>.

²² Id at 2.

However, ICANN's budget incentive for new gTLDs will be more than increased registry and registrar fees. The initial application fees expected in FY 2012 and 2013 will provide the organization with a considerable boost to its budget--a \$92.5 million dollar boost in fact (which could be quite conservative because it only projects 500 applications; in some of ICANN's earlier delegation scenarios they have projected 1,000 or more applications as the high end).²³ In the Fiscal Year 2012 budget projections for new gTLD revenues are expected to add another \$27.8 million to ICANN's revenue--or adding another 40 percent to its budget.²⁴ Likewise, in draft Fiscal Year 2013 new gTLD revenues are expected to add another \$64.8 million--that is nearly a 94 percent increase in revenues above the 2011 Fiscal Year figures mentioned above.²⁵

²³ New gTLD Program Cash Flow and P&L by Fiscal Year, ICANN.org, (September 9, 2011) (showing the gTLD financial projections) available at: <http://www.icann.org/en/financials/new-gtld-program-cash-flow-09sep11-en.pdf> ("gTLD Cash Flows Projections"); Delegation Rate Scenarios for New gTLDs, ICANN.org, (Oct. 2010) at p 6 (showing 1000 applications as extremely high activity and 1000s of applications as the maximum throughput) available at: <http://www.icann.org/en/topics/new-gtlds/delegation-rate-scenarios-new-gtlds-06oct10-en.pdf>.

²⁴ gTLD Cash Flow Projections at 2.

²⁵ Id.

ICANN says that it will use these revenues for intensive application review processes, but we would be remiss if we did not add that \$30 million or nearly one-third of all expected gTLD application revenues will be earmarked for a litigation risk fund. ICANN is clearly expecting many problems with this application window given the large litigation budget anticipated.²⁶

²⁶ Id.

Lack of Consensus

It is true that ICANN spent a number of years considering this Program at meetings around the world. However, the 152 members of CRIDO, representing major global companies and business groups, are living proof that the objections of industry sectors most affected by this Program have not been adequately considered or addressed by ICANN. A number of CRIDO members have actively voiced objections to the new gTLD process and the lack of adequate trademark protection mechanisms, yet their concerns have fallen on deaf ears. This entire constituency--

the one required to fund the new names and maintain the Internet's economic model--has been largely ignored. On the other hand, we do not hear any clamor for the Program. ICANN has failed to reach stakeholder consensus, a specific requirement of its contract with the NTIA.

Conflict of Interest Concerns

We are very concerned about potential conflicts of interest that may be present in this expansion proposal, for both the Board and staff of ICANN. It is very troubling that many of the same individuals who approved this expansion, including ICANN's former Chairman, now stand to benefit substantially from companies that will register applicants and manage the expansion. For example, within one month after the vote of the ICANN Board to approve the new gTLD expansion, former ICANN Chairman Peter Dengate Thrush had joined a London company called Top Level Domain Holdings, a company that will directly profit from the decision.

These events have cast a serious cloud over the legitimacy of the vote to approve the new gTLD Program. ICANN serves as a quasi-governing body for the day-to-day operations of the Internet. It is absolutely critical that all decisions are made in the public interest, not in the best interest of the closely-knit ICANN family.

We believe that ICANN can reclaim its legitimacy as an Internet governance body only by conducting a thorough and proactive review of both the gTLD expansion and the broader conflict of interest and ethics policies for the organization. We expressed these concerns in a letter to ICANN on October 2, 2011, which is available at <http://www.ana.net/getfile/16766>. Our letter notes that serious concerns about the inadequacy of the ICANN conflict of interest policies have been expressed by Senator Ron Wyden (D-OR), by Lawrence Strickling, Assistant Secretary for Communications and Information at the U.S. Department of Commerce, and by the full European Commission.

At its October meeting in Dakar, ICANN's Governmental Advisory Committee (GAC) expressed "extreme concern about the inadequacy of the existing rules of ethics and conflict of interest" in ICANN.²⁷ The conflict of interest issues threaten to undermine confidence in ICANN's decision-making. Obviously, if ICANN merely adopts prospective conflict of interest corrections they will not undo harms that have already occurred. Attention must be paid to the effects of conflicts on ICANN's deliberations and the legitimacy of the gTLD roll out proposal.

²⁷ GAC Communique--Dakar, October 27, 2011 (attached as Exhibit D).

Exemptions to the Program

Three groups were exempted or exempted themselves from the new gTLD Program: the Red Cross, the Olympics and ICANN itself. In letters to ICANN, both the Red Cross and the Olympics stated that they needed this type of protection to assure that the public who trust their brand identities would not fall victim to typosquatting, cybersquatting and phishing. The Red Cross noted that a substantial portion of their resources are used to counteract "fraudulent websites containing Red Cross names to solicit donations routinely after virtually every newsworthy disaster."²⁸

²⁸ David Meltzer, Senior Vice President International Services, Peggy Dyer, Chief Marketing Officer and Mary S. Elcano, General Counsel and Corporate Secretary, American Red Cross, to Kurt Pritz, Senior Vice President, Stakeholder Relations and Amy Stathos, Deputy General Counsel, ICANN, June 16, 2011, page 2.

While these exemptions may be appropriate, no other exemptions were extended to the thousands of other charities and foundations that similarly use the Internet to foster their public interest activities--yet they surely face the same kinds of harms.

The fact that ICANN exempted itself is even more informative. ICANN not only exempted its own name from the gTLD process, but several other names as well. But the protections for ICANN will not end at the top level. ICANN will have the opportunity to negotiate more protections for itself at the second level once new gTLD registries are selected. Take for example, the many reservations that ICANN made for itself on the new .xxx domain. In the .xxx registry, ICANN was even able to protect names of some of its leadership.²⁹ No other groups received the same protection. Major universities across the country, for example, have recently found it necessary to purchase multiple .xxx domain names to protect against links of their names to porn sites. The Ohio State University purchased a total of 19 domains, including buckeyeblitz.xxx and goldpants.xxx.³⁰ The cost for each of these domain name purchases was \$200 for a purely defensive purpose. These costs could be substantially higher if an auction is required to protect a name.

[29] Kevin Murphy, RodBeckstrom.xxx Will Never See the Light of Day, Domain Incite (Sept. 14, 2011) available at: <http://domainincite.com/rodbeckstrom-xxx-will-never-see-the-light-of-day/>.

[30] FoxNews.com, Penn State Bought Adult .XXX Domain Names to Block Usage Prior to Sex Abuse Scandal (Nov. 30, 2011) available at <http://www.foxnews.com/us/2011/11/30/penn-state-buys-adult-domain-names-to-block-usage/>.

These exemptions explode the argument that ICANN makes that it has developed adequate protections against cybersquatting, typosquatting and phishing. These charitable and other NGO groups will face the same dangers that the Red Cross and the Olympics highlighted, and many of them will not have the financial wherewithal to defend and protect their good name in the Internet marketplace.

Not All TLDs Are Alike

Our concerns primarily focus on generic Top Level Domains (gTLDs). These concerns do not generally extend to so-called ccTLDs dealing with country designators such as .co, .cn, .eu, and .de. Nor are we opposed to the use of other languages and character sets in the Domain system, although we believe that the public interest requires that all Top Level Domains be cost beneficial and not impose undue burdens on the Internet or undermine consumer trust. Neither do we believe that there is something sacrosanct about maintaining the existing 22 gTLD system unaltered. However, all of our companies, associations and groups believe the unrestricted and unlimited expansion of gTLDs is a reckless experiment that needs to be halted and reassessed before it damages the very positive growth of consumer trust that is fundamental to the Internet marketplace.

Conclusion

We commend the Committee for holding this important hearing. Examining the membership list of CRIDO demonstrates that the concerns of the worldwide business community are extraordinarily widespread. The issues that we raise will fall even harder on consumer groups, charities, foundations, and myriad other entities that have even less financial ability to protect their institutional interests and that will be impacted by the rapid, unlimited opening of the generic Top Level Domain space.

We reject the argument of those who say that it is too late for ICANN to step back and reevaluate or for NTIA, the Governmental Advisory Committee and other key Internet participants to try to make one last major effort to forestall this potentially severely damaging initiative. There is absolutely nothing sacred about the January 2012 implementation date. Given the serious concerns expressed by a broad and growing cross-section of the entire American and global business community, the companies which provide the economic foundation of the Internet, and the potential dangers to consumers, we believe it would be irresponsible for ICANN to proceed full-speed ahead with the roll-out next month.

We are sensitive to the U.S. government's concern that by acting, in any capacity, it could fracture the voluntary domain name system, which is embedded in the authoritative root. Or, alternatively, that control of the ICANN Internet governance function could be relinquished to the International Telecommunications Union. However, given the potential harms that we have identified from this Program: consumer harm, cybersquatting, typosquatting, Internet piracy and product counterfeiting, inaction could be far more destabilizing to ICANN as a governance body. If the new gTLDs launch and such problems occur en masse, then foreign governments will have no choice other than to call for the dismantling of ICANN. No one here at this hearing wants to see ICANN dismantled. We would like to buttress its authority by ensuring that the gTLD Program is maintained and developed appropriately in the public interest and promotes consumer trust.

We very much appreciate this opportunity to testify and the careful consideration of our and the other members of CRIDO's views.

Exhibit A

Association Signatories to the ICANN Petition

AAF-Amarillo
AAF-Dallas
AAF-Fort Worth
AAF Hampton Roads
AdClub Cincinnati
Advertisers Association of Guatemala (Guatemala)
Advertisers Association of Nigeria (Nigeria)
Advertisers Association of Turkey (Turkey)
Advertisers Business Group (United Arab Emirates)
Agrupacion Nacional de Anunciantes de Mexico (Mexico)
American Advertising Federation (AAF)
American Advertising Federation Baltimore, Inc.

American Advertising Federation of Des Moines
 American Apparel & Footwear Association (AAFA)
 American Association of Advertising Agencies (4As)
 American Beverage Association (ABA)
 American Council of Life Insurers (ACLI)
 American Health Care Association (AHCA)
 American Insurance Association (AIA)
 American Intellectual Property Law Association (AIPLA)
 American Society of Association Executives (ASAE)
 Asociacion Espanola de Anunciantes (Spain)
 Asociacion Nacional de Anunciantes de Colombia (Colombia)
 Asociacion Nacional de Anunciantes Peru (Peru)
 Asociacion Nacional de Anunciantes Venezuela (Venezuela)
 Asociacion Nacional de Avisadores Chile (Chile)
 Associacao Brasileira de Anunciantes (Brazil)
 Associacao Portuguesa de Anunciantes (Portugal)
 Association of Advertisers in Ireland (Ireland)
 Association of Canadian Advertisers (Canada)
 Association of National Advertisers (ANA)
 Association of New Zealand Advertisers (New Zealand)
 Association of Swiss Advertisers (Switzerland)
 Austin Advertising Federation
 Australian Association of National Advertisers (Australia)
 Boise Advertising Federation
 Bond van Adverteerders (The Netherlands)
 Bulgarian Association of Advertisers (Bulgaria)
 Cable Advertising Bureau (CAB)
 Camara Argentina de Anunciantes (Argentina)
 Camara de Anunciantes del Paraguay (Paraguay)
 Camara de Anunciantes de Uruguay (Uruguay)
 China Association of National Advertisers (China)
 Consumer Electronics Association (CEA)
 Czech Association for Branded Products (Czech Republic)
 Cyprus Advertisers Association (Cyprus)
 Dansk Annoncoerforening (Denmark)
 Direct Marketing Association (DMA)
 European Association of Communications Agencies (EACA)
 European Publishers Council (EPC)
 Food Marketing Institute (FMI)
 Grocery Manufacturers Association (GMA)
 Groupement des Annonceurs du Maroc (Morocco)
 Hellenic Advertisers Association (Greece)
 Hungarian Branded Goods Association (Hungary)
 Idaho Advertising Federation
 Idaho Falls Advertising Federation
 Incorporated Society of British Advertisers (United Kingdom)
 Indian Society of Advertisers (India)
 Indonesia Advertisers Association (Indonesia)
 Intellectual Property Owners Association (IPO)
 Interactive Advertising Bureau (IAB)
 IAB Europe
 The Israel Marketing Association (Israel)
 Japan Advertisers Association (Japan)
 Lebanese Association of Advertisers (Lebanon)
 Lewis-Clark Valley Advertising Federation
 Magic Valley Advertising Federation
 Mainostajien Liitto (Finland)
 Malaysian Advertisers Association (Malaysia)
 The Marketing Association of South Africa (South Africa)
 Mobile Marketing Association (MMA)
 MPA--the Association of Magazine Media
 National Association of Broadcasters (NAB)
 National Association of Manufacturers (NAM)
 National Confectioners Association
 National Council of Chain Restaurants (NCCR)
 National Restaurant Association (NRA)
 Norwegian Association of Advertisers (Norway)
 Organisation Werbungtreibende im Markenverband (Germany)
 Pakistan Advertisers Society (Pakistan)
 Philippine Association of National Advertisers (The Philippines)
 Pocatello Advertising Federation
 Promotion Marketing Association (PMA)
 Property Casualty Insurers Association of America
 Radio Advertising Bureau (RAB)
 Retail Industry Leaders Association (RILA)
 Russian Association of Advertisers (Russia)
 Singapore Advertisers Association (Singapore)
 Slovak Association for Branded Products (Slovakia)
 Slovenian Advertising Chamber (Slovenia)

Sveriges Annonserer (Sweden)
Television Bureau of Advertising (TVB)
Union Belge des Annonceurs (Belgium)
Union des Annonceurs (France)
U.S. Chamber of Commerce
Utenti Pubblicita Associati (Italy)
World Federation of Advertisers (WFA)
Company Signatories to the ICANN Petition

Acxiom
adidas
Adobe Systems Incorporated
Allstate Insurance Company
American Express
Autodesk, Inc.
Brinker International
Burger King Corporation
The Coca-Cola Company
Chrysler Group LLC
Church's Chicken
Combe Incorporated
ConAgra Foods
Costco Wholesale Corporation
Darden Restaurants, Inc.
Dell Inc.
Dunkin' Brands, Inc.
Educational Testing Service (ETS)
Fidelity Investments
Ford Motor Company
General Electric Company
GroupM
Hack Creative
Havas
Hewlett-Packard Company
Hunter Douglas NA
J.C. Penney Company, Inc.
Johnson & Johnson
Kellogg Company
Kraft Foods
La Quinta
Liberty Mutual
MillerCoors
Money Mailer of Amarillo
Nationwide Mutual Insurance Company
Neon Sun Tanning Salon
Nestle USA
ORCI
OSI Restaurant Partners, LLC
Papa John's
Procter & Gamble
Publicis Groupe
Pulte Group
Reebok
Rollins, Inc.
Samsung
Siemens AG
Siemens Corporation
The J.M. Smucker Company
Toyota
US Bank
Vanguard
Verge
Walmart

Exhibit B
Coalition for Responsible Domain Oversight
November 10, 2011

Hon. John Bryson,
Secretary,
U.S. Department of Commerce,
Washington, DC.

Dear Secretary Bryson:

We, the undersigned, representing large and small business, in virtually every industry sector, in the United States and around the world, are writing to express our strong concern with respect to the June 2011 decision by the Internet Corporation for Assigned Names and Numbers (ICANN) to approve the top-level domain (gTLD) Applicant Guidebook and to move forward with plans to open the new gTLD application window on January 12, 2012 (the ICANN plan, decision or

ICANN Proposal) on a virtually unlimited basis.

ICANN's action was taken despite widespread and significant objections raised throughout the process by many in the global community of Internet users. ICANN's decision was not made in the public interest, does not promote consumer trust, and does not benefit the public, as required in the Affirmation of Commitments between ICANN and the National Telecommunications and Information Administration (NTIA).

Moreover, additional facts have come to light since ICANN announced the most recent iteration of the Applicant Guidebook--including rounds of troubling conflict of interest questions--which cast a shadow over the entire process leading up to ICANN's decision. Those facts, combined with the current state of the global economy, raise substantial issues regarding the wisdom of moving forward with ICANN's plan, given its undisputed costs and its merely putative benefits.

The ICANN Proposal would unduly burden a diverse range of public and private brand holders, as they would be forced to spend ever-greater amounts of time and resources simply to protect their brands. In addition, there is an unacceptably high risk that the ICANN plan would confuse consumers, increase the already unacceptable level of fraud and identity theft on the Internet, create new opportunities for Internet crime, and jeopardize cyber security. Businesses and not-for-profits alike have repeatedly raised these issues with ICANN over the last four years, with no acceptable resolution.

For these reasons, we respectfully call on the Department of Commerce and, specifically the NTIA, to persuade ICANN to postpone the opening of the top-level domain application window unless or until such time as ICANN convincingly demonstrates that unlimited TLD name expansion would:

Promote consumer trust;

Enhance Internet security;

Promote widespread economic benefits across diverse economic sectors and stakeholders; and

Demonstrate that these benefits will exceed the costs that such gTLD expansion would inevitably impose on the global Internet community.

Respectfully submitted,

Organizations
AdClub Cincinnati
American Advertising Federation (AAF)
AAF-Amarillo
AAF-Dallas
AAF-Fort Worth
AAF Hampton Roads
American Advertising Federation Baltimore, Inc.
American Advertising Federation of Des Moines
American Apparel & Footwear Association (AAFA)
American Association of Advertising Agencies (4As)
American Beverage Association (ABA)
American Council of Life Insurers (ACLI)
American Health Care Association (AHCA)
American Insurance Association (AIA)
American Intellectual Property Law Association (AIPLA)
American Society of Association Executives (ASAE)
Association of Canadian Advertisers (ACA)
Association of National Advertisers (ANA)
Austin Advertising Federation
Boise Advertising Federation
Cable Advertising Bureau (CAB)
Consumer Electronics Association (CEA)
Direct Marketing Association (DMA)
European Association of Communications Agencies (EACA)
European Publishers Council (EPC)
Food Marketing Institute (FMI)
Grocery Manufacturers Association (GMA)
Idaho Advertising Federation
Idaho Falls Advertising Federation
Intellectual Property Owners Association (IPO)
Interactive Advertising Bureau (IAB)
IAB Europe
Lewis-Clark Valley Advertising Federation
Magic Valley Advertising Federation
Mobile Marketing Association (MMA)
MPA--the Association of Magazine Media

National Association of Broadcasters (NAB)
National Association of Manufacturers (NAM)
National Confectioners Association
National Council of Chain Restaurants (NCCR)
National Restaurant Association (NRA)
Pocatello Advertising Federation
Promotion Marketing Association (PMA)
Radio Advertising Bureau (RAB)
Retail Industry Leaders Association (RILA)
Television Bureau of Advertising (TVB)
U.S. Chamber of Commerce
World Federation of Advertisers (WFA)
Corporations
Acxiom
Adobe Systems Incorporated
Allstate Insurance Company
American Express
Brinker International
Burger King Corporation
The Coca-Cola Company
Combe Incorporated
ConAgra Foods
Costco Wholesale Corporation
Darden Restaurants, Inc.
Dell Inc.
Dunkin' Brands, Inc.
Educational Testing Service (ETS)
Fidelity Investments
Ford Motor Company
General Electric Company
Hack Creative
Hewlett-Packard Company
Hunter Douglas NA
J.C. Penney Company, Inc.
Johnson & Johnson
Kellogg Company
La Quinta
Liberty Mutual
MillerCoors
Money Mailer of Amarillo
Nationwide Mutual Insurance Company
Neon Sun Tanning Salon
Nestle USA
ORCI
OSI Restaurant Partners, LLC
Papa John's
Procter & Gamble
Publicis Groupe
Pulte Group
Samsung
US Bank
Vanguard
Verge

cc: Lawrence E. Strickling, Assistant Secretary for Communications
and Information and Administrator, National Telecommunications and
Information Administration, U.S. Department of Commerce

Fiona Alexander, Associate Administrator, National
Telecommunications and Information Administration, U.S. Department of
Commerce

Vernita Harris, Deputy Associate Administrator of the Office of
International Affairs, National Telecommunications and Information
Administration, U.S. Department of Commerce

Suzanne Murray Radell, Senior Policy Advisor, National
Telecommunications and Information Administration, U.S. Department of
Commerce

Elizabeth Bacon, Telecommunications Policy Specialist, National
Telecommunications and Information Administration, U.S. Department of
Commerce

Cameron F. Kerry, General Counsel, U.S. Department of Commerce

Daniel K. Inouye, Chairman, Committee on Appropriations, U.S.
Senate

John D. Rockefeller IV, Chairman, Committee on Commerce, Science and Transportation, U.S. Senate

Patrick J. Leahy, Chairman, Committee on the Judiciary, U.S. Senate

Thad Cochran, Ranking Member, Committee on Appropriations, U.S. Senate

Kay Bailey Hutchison, Ranking Member, Committee on Commerce, Science and Transportation, U.S. Senate

Charles E. Grassley, Ranking Member, Committee on the Judiciary, U.S. Senate

Barbara Mikulski, Chair, Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations, U.S. Senate

Al Franken, Chairman, Subcommittee on Privacy, Technology and the Law, Committee on the Judiciary, U.S. Senate

Tom Coburn, Ranking Member, Subcommittee on Privacy, Technology and the Law, Committee on the Judiciary, U.S. Senate

Ron Wyden, Chairman, Subcommittee on International Trade, Customs, and Global Competitiveness, Committee on Finance, U.S. Senate

Harold Rogers, Chairman, Committee on Appropriations, U.S. House of Representatives

Fred Upton, Chairman, Committee on Energy and Commerce, U.S. House of Representatives

Lamar Smith, Chairman, Committee on the Judiciary, U.S. House of Representatives

Norm Dicks, Ranking Member, Committee on Appropriations, U.S. House of Representatives

Henry A. Waxman, Ranking Member, Committee on Energy and Commerce, U.S. House of Representatives

John Conyers, Ranking Member, Committee on the Judiciary, U.S. House of Representatives

Bob Goodlatte, Chairman, Subcommittee on Intellectual Property, Competition and the Internet, Committee on the Judiciary, U.S. House of Representatives

Frank Wolf, Chairman, Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations, U.S. House of Representatives

Mel Watt, Ranking Member, Subcommittee on Intellectual Property, Competition and the Internet, Committee on the Judiciary, U.S. House of Representatives

Chaka Fattah, Ranking Member, Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations, U.S. House of Representatives

Exhibit C
Governmental Advisory Committee
Dakar, 27 October 2011
GAC Communique--Dakar

I. Introduction

The Governmental Advisory Committee (GAC) of the Internet Corporation for Assigned Names and Numbers (ICANN) met in Dakar, Senegal during the week of October 22-27, 2011. Forty-nine Governments participated in the meeting: 46 present and 3 by remote participation and six Observers. The GAC expresses warm thanks to the local hosts, The Ministry of Communication, Telecommunications and Information Technology (MICOMTELTIC) and the Regulatory Authority for Telecommunications and Post (ARTP) for their hospitality in organizing the meeting and ICANN for supporting the GAC during the meeting.

II. New gTLDs

The GAC further discussed and decided on the formulation of GAC advice for inclusion in Module 3 of the Applicant Guidebook [Annex I].

During the discussion ICANN Staff underlined their understanding that advice regarding the definition of Geographic Names should be adopted by the GAC.

The GAC congratulates the JAS working group on the final report and recommendations, which are consistent with GAC advice. The GAC looks forward to the Board providing clear timelines for implementation of the recommendations to enable needy applicants to join in full and meaningfully in the first round.

The GAC raised concern about the unpredictability of the actual number of applications that governments would have to digest to proceed after the end of the application period. The GAC made clear, that if the number of applications published by ICANN significantly exceeds 500, GAC members might not be able to process a very large number of applications in the very short early warning procedure and in the limited time for issuing GAC advice on all these strings.

Further, the GAC asked ICANN for clarification about its intention to process these applications in batches of 500, in the case that there are more than SOD applications. The GAC urges ICANN to clarify the procedures and implications for applicants being processed in different batches, as this might have implications for competition and applicants' business models.

Following presentations by the ICANN staff and the Security and Stability Advisory Committee, the GAC took note of the SSAC consideration of the combined impact of new gTLDs and other changes such as the introduction of IPv6, DNSSEC and IDNs to the root. The GAC welcomes the confirmation of the commitment by the ICANN Board to provide a full report with a complete analysis, including all underlying data, of the root system scalability well before the opening of the new gTLDs application round. The GAC further welcomes the confirmation of the commitment by the Board to evaluate the impact on the system after the 1st round, with the understanding that the launch of a second round is contingent on the outcome of this evaluation, in particular the absence of negative effects on the root system. The GAC believes that in order for this evaluation to be effective, an appropriate and trustable monitoring system needs to be in place.

In its discussions with the Board regarding the Communication Plan for new gTLDs, the GAC emphasised the importance of promoting the gTLDs application round in all countries, including developing countries. The GAC suggested that levels of awareness be continually assessed and reviewed, and priorities and target areas under the Plan be adjusted accordingly in the run up to the launch of the round.

The GAC welcomed the assurances received from the Board and staff that the evaluation of applications will ensure a level playing field for applicants and that any conflicts of interest will be identified and avoided accordingly.

III. Law Enforcement (LEA) Recommendations

In recent years, the Internet has grown to have over two billion users and be a significant contributor to the global economy.

Cyber-crime is a growing threat to the security and stability of the Internet, with broad and direct public policy impacts. Recent estimates suggest that the direct financial impact of cyber-crime is extremely significant.

Law enforcement agencies have identified a series of specific problems which are limiting their ability to address this growing problem.

As part of this, law enforcement agencies have identified specific areas of concern in the ICANN context, relating to contractual weaknesses and a lack of necessary due diligence.

To address these urgent problems, in 2009 law enforcement agencies made 12 concrete recommendations to reduce the risk of criminal abuse of the domain name system.

These recommendations were informally socialized with the registrar community, the GAC, and with ICANN compliance staff over the course of several months, before the GAC advised the Board in its Brussels communique that it formally endorsed the recommendations.

Direct exchanges between law enforcement agencies and registrars continued in September 2010 in Washington D.C., in February 2011 in Brussels, and during the March and June 2011 ICANN meetings.

As a complement to the June exchanges in Singapore, the GAC urged the Board to support actions necessary to implement those recommendations as a matter of urgency.

To date, none of the recommendations have been implemented, and the risks remain. The GAC therefore advises the ICANN Board to take the necessary steps to ensure that ICANN's multistakeholder process effectively addresses these GAC-endorsed proposals as a matter of extreme urgency.

IV. Accountability and Transparency Review Team Recommendations (ATRT)

The GAC welcomes the update provided by ICANN staff on the ATRT Recommendations progress and the suggestions presented with regards to the implementation of recommendations 9 through 14 on the GAC role, effectiveness and interaction with the Board.

The GAC looks forward to an expedited implementation of the Joint

Working Group and ATRT recommendations and is keen to continue working with the Board on the Recommendations related to the GAC.

V. Conflict of interest

The GAC expresses extreme concern about the inadequacy of the existing rules of ethics and conflict of interest in the light of recent events and therefore welcomes the approval of the motion by the Board Governance Committee on 15 September 2011 concerning "ethics and conflicts of interest". The GAC looks forward to the publication of a timeline with clear and effective actions as a conclusion of the Dakar meeting or shortly thereafter. In order to ensure the legitimacy and sustainability of the multi stakeholder model as enshrined in ICANN, the GAC underlines the extreme urgency of putting in place effective and enforceable rules on conflicts of interest.

The GAC will keep this important issue under review and may come forward with further advice before the Costa Rica GAC meetings.

VI. Meeting with the Generic Names Supporting Organisation (GNSO)

The GAC and the GNSO exchanged views on a number of issues, beginning with an overview by ICANN staff of the GNSO policy development process. Consistent with the recommendations of the Accountability and Transparency Review Team and the related GAC-Board Joint Working Group, the GAC stressed its interest in ensuring that GAC views are provided and taken into account at early stages in the policy development process.

The meeting also discussed the implementation of the Law Enforcement Agency (LEA) recommendations to mitigate Domain Name System abuse, which were endorsed by the GAC in June 2010. The GAC expressed its disappointment that registrars were only able to report on their consideration of three of the twelve LEA Recommendations. Further, the reported progress fell substantially short of what GAC members believed had been achieved during its meetings with registrars in Singapore in June 2011. The GAC also expressed concern that there was no clarity on how the other nine recommendations were being progressed, despite the registrars' agreement at the Singapore meeting to provide regular status

reports. The GAC informed the GNSO Council of its intention to request the ICANN Board to take prompt and concrete action to implement the GAC/LEA recommendations.

The meeting also addressed the GAC's proposal to the GNSO on the protection mechanism for the International Olympic Committee and Red Cross/Red Crescent names at the top and second levels. The GAC requested feedback from the GNSO on the proposal as a first step in collaborating on advice for the ICANN Board in this regard, consistent with the ICANN Board Resolution in Singapore.

The GAC looks forward to further engagement with the GNSO to work more effectively within the ICANN processes and reinforce the sustainability of the multi-stakeholder model.

VII. Meeting with the At-Large Advisory Group (ALAC)

The GAC met with the ALAC to discuss Conflict of Interest issues within the ICANN Board and staff. The GAC agrees that this is a critical matter that needs to be addressed as a high priority within the community.

The GAC and ALAC also discussed the Joint Applicant Support (JAS) Working Group as well as the ALAC and GAC Joint Statement. The GAC expects a decision to be taken for implementation in time for the opening of the first new gTLD round.

In light of the common interest of advancing improvements in the ICANN model, the GAC and ALAC also discussed the ongoing work of the Accountability and Transparency Review Team (ATRT). The GAC shared the areas identified as a priority in the framework of the ATRT and the Joint Working Group recommendations, looking forward to an expedited implementation.

VIII. GAC Operating Principles

The GAC amended Principle 47 of its Operating Principles clarifying its understanding of consensus. The definition now introduced derives from United Nations practice and understands consensus as adopting decisions by general agreement in the absence of formal objections. The GAC noted that according to UN practice individual members may make reservations, declarations, statements of interpretation and/or statements of position regarding a consensus decision, provided such texts do not represent an objection to the consensus [Annex II].

IX. Joint session with the Country Code Names Supporting Organization (ccNSO)

The GAC met with the ccNSO to discuss the progress and ongoing work of the Framework of Interpretation cross-community Working Group (Fol) on delegation and redelegation, and the mechanisms for the GAC to provide feedback and contribute to this work within a timeline that the ccNSO has provided. In addition, the ccNSO shared an update of its current work areas and its organisational structure.

The GAC is eager to further engage with the ccNSO to provide timely

inputs on the different stages of the Fol work.

X. Meeting with the Security and Stability Advisory Committee (SSAC)

The GAC thanks the SSAC for providing an update on its work including blocking and reputation systems, WHOIS matters and single label domain names. Further, the GAC thanks the SSAC Chair for discussions on Root Zone Scaling and Resource Public Key Infrastructure (RPKI).

The GAC looks forward to receiving further updates on DNS blocking matters and other relevant security and stability related matters.

XI. Meeting with the Nominating Committee (NomCom)

The GAC met with the Nominating Committee and discussed the skill-sets needed of an ICANN Director, as outlined in the Accountability and Transparency Review Team (ATRT) recommendations to improve the selection process. The NomCom invited individual GAC members to provide further inputs.

XII. Election of Vice-Chairs

The GAC has reelected the current vice-chairs, Choon-Sai Lim (Singapore), Maria Hall (Sweden) and Alice

Munyua (Kenya) to continue their mandate for another year.

* * *

The GAC warmly thanks all those among the ICANN community who have contributed to the dialogue with the GAC in Dakar.

The GAC will meet during the period of the 43rd ICANN meeting in San Jose, Costa Rica.

Annex I

Applicant Guidebook Module 3.1: GAC Advice on New gTLDs

ICANN's Governmental Advisory Committee was formed to consider and provide advice on the activities of ICANN as they relate to concerns of governments, particularly matters where there may be an interaction between ICANN's policies and various laws and international agreements or where they may affect public policy issues.

The process for GAC Advice on new gTLDs is intended to address applications that are identified by governments to be problematic, e.g., that potentially violate national law or raise sensitivities.

GAC members can raise concerns about any application to the GAC. The GAC as a whole will consider concerns raised by GAC members, and agree on GAC advice to forward to the ICANN Board of Directors.

The GAC can provide advice on any application. For the Board to be able to consider the GAC advice during the evaluation process, the GAC advice would have to be submitted by the close of the Objection Filing Period (see Module 1).

GAC Advice may take one of the following forms:

I. The GAC advises ICANN that it is the consensus of the GAC that a particular application should not proceed. This will create a strong presumption for the ICANN Board that the application should not be approved.

II. The GAC advises ICANN that there are concerns about a particular application ``dot-example''. The ICANN Board is expected to enter into dialogue with the GAC to understand the scope of concerns. The ICANN Board is also expected to provide a rationale for its decision.

III. The GAC advises ICANN that a particular application should not proceed unless remediated. This will raise a strong presumption for the Board that the application should not proceed unless there is a remediation method available in the Guidebook (such as securing one or more government's approval) that is implemented by the applicant.

Annex II

Operating Principles Article XII Principle 47

The GAC works on the basis of seeking consensus among its membership. Consistent with United Nations practice,¹ consensus is understood to mean the practice of adopting decisions by general agreement in the absence of any formal objection. Where consensus is not possible, the Chair shall convey the full range of views expressed by members to the ICANN Board.

¹ Statements by GAC members related to such advice will be posted on the GAC website.

Senator Klobuchar. Thank you, Mr. Chairman.
Ms. Dyson.

STATEMENT OF ESTHER DYSON, FOUNDING CHAIRMAN OF ICANN, 1998-2000; CURRENTLY AN INDEPENDENT ANGEL INVESTOR

Ms. Dyson. Good morning, Chairman, Senator Klobuchar, Senator Cantwell. I'm Esther Dyson. I'm honored to be here.

I was the founding chairman of ICANN from 1998 to 2000. In fact, the first and only time I testified previously in Congress I was defending ICANN against charges that it was imposing a tax on the Internet. At the time, I believe, those charges weren't true. We were charging sensible, realistic costs to maintain a system that already existed.

At that time, I also believed that adding new TLDs to the domain name system would be a good idea. However, over time and in the face of continuing disappointments with what ICANN did and became, I've changed my mind, and that's why I'm here today.

First of all, ICANN's process of consulting with the public hasn't really worked. I'm the only person here talking on behalf of the real public, not on behalf of large trademark owners, not on behalf of big businesses, not on behalf of governments, not on behalf of nonprofits, but actually on behalf of the users, who I think stand to be extremely confused if there's a proliferation of top-level domain names.

Either marriott.com and marriott.hotel are the same, in which case marriott.hotel is simply redundant; or they're different, in which case it's simply confusing. Then add dot-hotel, and then hotel.marriott, residenceinn.marriott, and so on. Now multiply that by hundreds or thousands of different top-level domains. It will create a profusion of new names for Marriott to protect without creating any additional value, because there remains only one Marriott.

That's why I think this whole idea is fundamentally misguided. It's akin to derivatives, which also create great complexity and new opportunities for transactions and, yes, both derivatives and domain names create opportunities for entrepreneurs. But they don't really create any value for the economy. That's my problem with this. I don't think any particular domain name is evil or should be illegal, but it's a big waste.

Finally, you could ask, what should ICANN do and what will happen if we have a lot of new domain names? I studied economics in college and I didn't learn a whole lot there, to be honest, but I did learn how to think. Fundamentally, economics is about math and common sense. Right now what we have is an artificially restricted scarcity of domain names. We can enlarge the group of domain names, in which case it will be artificial and somewhat enlarged, but the same issues will happen. Or we can say: We really believe in no scarcity at all; let's have as many domain names as anybody wants. And then you don't really need ICANN because there's nothing to protect. Or we can stick with the current situation and perhaps some measured expansion to accommodate non-Latin alphabets and the like.

In the long run, probably people will start looking for everything through the search engines and so domain names won't matter. But with ICANN's current plan, there's going to be a period of great confusion in the meantime. I don't think it makes sense to go through a period of several years where there's a profusion of domain names, a proliferation of the kinds of costs and abuse Angela Williams and Dan Jaffe talked about. It just doesn't make sense.

I understand ICANN is not responsible to Congress. I'm not suggesting that you in this room do much, other than what you are doing here, which is to raise the public's awareness of this issue. And then I hope that ICANN will go back and reconsider and somehow figure out how to actually get real consumers involved and maybe just stick to the international domain names which do make sense and which with luck will be properly regulated, largely by other governments.

But in general, I don't see the point of this program.

Thank you very much.

[The prepared statement of Ms. Dyson follows:]

Prepared Statement of Esther Dyson, Founding Chairman of ICANN, 1998-2000; Currently an Independent Angel Investor

Thank you, Chairman Rockefeller, Ranking Member Hutchison, esteemed Senators, Committee staff and others, for your attention to this important issue. As a private citizen with a variety of affiliations but beholden to no single employer or institution, I am honored to be here today.

My name is Esther Dyson. I assume that I was invited to testify before this Committee primarily because I was the founding chairman of ICANN's board, from its inception in September 1998 until late in 2000. I continued as a member of the ICANN At-Large Advisory Committee for a

year or two after that, and subsequently went on with the rest of my life. I am a casual user of domain names; I have a couple registered that I don't use, and then I have owned and used edventure.com since before my ICANN tenure. As an investor, a board member of non-profit and for-profit companies and as a user of the Internet, I do have a substantial interest in freedom of speech and freedom to innovate.

Other than that, I have no particular business interests in the domain name system, and I paid my own way here today. Moreover, unlike most of the public, I have the private resources, the time and the insider knowledge to come here to give you what I hope you will find to be an informed and useful perspective.

I come as a loving critic to improve ICANN, not to bury it.
Some Brief History

When I joined the board of ICANN back in 1998, the majority of its members had almost no experience with the Internet and attempted to serve the interests of a broad public. At the time, our primary mission was to break the monopoly of Network Solutions (which managed .com among other registries), first by separating the functions of registry (which manages the list of names in a particular top-level domain) and registrar (which resells second-level domain names to the public).

We succeeded in that, and we also managed to launch a few new TLDs, including .biz, .info, .museum and .coop. Of those, only .biz and .info have had much success. Separately, a number of creative people--whose initiative I sincerely applaud--made special-purpose TLDs out of country codes (ccTLDs) such as .tv (Tuvalu), .md (Moldova), .ly (Libya) and most recently .co (Colombia).

At the same time, it's fair to say that .com retained its first-mover advantage as by far the leading TLD. Users instinctively type COMPANYNAME.com into their browsers.

I myself was a big fan of the concept of new TLDs. I believed that it would broaden the market, encourage innovation (as with the repurposed ccTLDs I mentioned above). . .and besides, why should ICANN enforce artificial scarcity?

But I have since changed my mind. Now I would like to explain why, and finally to suggest some paths forward.

Why I Changed My Mind--Confusing to the Public

After my two-year term as chairman of ICANN expired in 2000, I joined the At-Large Advisory Committee. Our mission was to make sure the voice of the ultimate users--not just the sellers, resellers and buyers of domain names--was heard. That turned out to be an almost impossible task. Naturally enough, normal members of the public did not have the time or interest (or funds) to involve themselves in ICANN's business. Despite numerous attempts, we failed to attract more than a few thousand people at best to our various meetings, online conversations, requests for comment and the like. Our online message board was mostly painful to read. When I finally resigned from the ALAC, I too found ICANN too removed from my daily interests to pay much attention to its activities.

Why I Changed My Mind--Lack of Oversight

Our premise for new TLDs was that we would select registry managers who would add value to their TLDs and monitor the behavior of their registrars, who would in turn make sure that the registrants followed whatever requirements the registries imposed. In fact, the business overall has become one of sleazy marketing practices, front-running (where registrars or related parties buy names for their own accounts, competing unfairly with their customers) and a high proportion of spammy domains. Unfortunately, the ease and lack of accountability with which someone can buy a domain name has led to a profusion of spam, phishing and other nefarious sites. There's no reason to think the situation would be any better with the next set of new TLDs; there would simply be more of them.

And as the case of .xxx shows, many of the second-level domain-name purchasers who do have honest intentions will probably be more interested in defensive registrations rather than adding value to the system. (One such case is that of Meetup.com, out of whose office I work and on whose board I sit. Meetup has attempted to register Meetup.xxx, but has been told the name has been reserved on the "premium queue" to be auctioned off to the highest bidder. Even more perversely, Meetup cannot even bid at auction for its own trademarked name unless it somehow becomes registered as a member of the "adult community," which is at odds with the very nature of its business and the very reason it sought to reserve the name. Meetup's only remedy ultimately will be to file an expensive and time-consuming trademark lawsuit.)

Why I Changed My Mind--Misallocation of Resources

Our initial assumption was that new TLDs would be relatively cheap. But ICANN's current plan envisions an expensive application process and expensive registrations.

The amount of money likely to be spent on these new TLDs--both by

new applicants and registrants, and by incumbents protecting their names--is huge, at a time when businesses and consumers are just scraping by. I believe in innovation, but only if it adds value. In this case, most of the new domains would simply add friction.

As with .xxx, where many of the registrants are actually companies who want to make sure their name is not used in .xxx, I predict that many or most of the new registrations will be defensive. Marriott.com, for example, works fine; why do they need marriott.hotels except defensively? (Or why do they need to own .marriott?)

The rationale is that there's a shortage of domain names . . . but actually, there's a shortage of space in people's heads. When you add, for example, .hotel, you are not creating new space; you are carving up the «hotel» space in people's heads into .com and .hotel. So was that Marriott.com or Marriott.hotel? or dyson.com or dyson.hotel? if I decide to rent out my apartment. Consumers will inevitably be confused, and the primary beneficiaries will be Google, trademark lawyers. . . and of course the registries and registrars.

In short, it's as if you owned a field, and you paid a border guard. Now the border guards want you to pay separately for each little chunk in your field; it's still the same field, but now it's carved into ever-smaller pieces. To use my own small field as an example, the field was originally called edventure.com. Now the new chunks could be labeled edventure.angel, edventure.blog, edventure.nyc, edventure.post, edventure.fin . . . and perhaps I'll also be solicited to buy the TLD .edventure so that some educational or editorial group won't get hold of it.

In the end, new domain names are somewhat like derivatives: They add complexity and transactions and lots of rights and obligations without actually creating anything of value.

Context: Innovation Can Happen Without New TLDs

I have heard from people who say that the new TLDs will lead to great innovation. I once thought so too. I had visions of .fin for For example, there are people who want to launch .eco and .green as the foundation of a «green» marketing campaign that would purportedly do untold good for the world at large. But what's wrong with edventure.com/green?

Meanwhile, there is innovation in namespaces, but it comes with overall innovation. One of the best and simplest examples I can think of is twitter, where I am @edyson or <http://twitter.com/#!/edyson>--a fine use of an existing TLD.

Remedies . . .

Of course, my task here does not end with complaining. What should be done? First of all, it is not the role of Congress to tell ICANN what to do. ICANN is accountable to the worldwide public, not to the U.S. Government (except through one limited contract). But it is the role of Congress to shed light on issues of public interest, and to suggest politely that ICANN follow through more fully on its acknowledged obligation to solicit public feedback. As I discovered during my time at ICANN, it's hard to get the public interested in these matters. (In that respect too, domain names are like derivatives.)

As I mentioned, ICANN has indeed followed the process of soliciting public opinion, but I do not believe they have obtained «informed consent,» in the sense that people actually understand the issues.

Much Broader Consultation With the Public

Therefore, although personally I would like to see ICANN simply abandon this program, I have been told again and again that this is not «realistic.» If that is indeed the case, I would recommend that ICANN rapidly re-launch its consultation process with much broader outreach. Perhaps these hearings and the subsequent press coverage will help to inform the broader public and shade ICANN's approach to new TLDs.

Much Stronger Front-End Protection

At the same time, ICANN could offer much broader and easier protection (from similar-sounding TLDs) to existing registrants, akin to what ICANN itself has and what the Red Cross is asking for. Of course, this would obviate much of the interest in the new domain names, but it is a proper obligation for ICANN to undertake, in my opinion.

Conclusion

The current domain name system in some ways is an accident of history. ICANN was created to regulate it, independently of any government and on behalf of the Internet--and world--community as a whole. Just as with fishing rights, communications spectra, taxi medallions and other «commons,» there's a delicate balance between too few and too many domain names, which this new initiative may well upset if it goes forward without more serious study. As the old saying goes: If it ain't broke, don't fix it!

I would welcome any questions.

Senator Klobuchar. Thank you very much.
We'll now turn it over to Chairman Rockefeller.

STATEMENT OF HON. JOHN D. ROCKEFELLER IV,
U.S. SENATOR FROM WEST VIRGINIA

Senator Rockefeller. I went to college and I didn't learn very much either, so don't feel badly about it.

This hearing is interesting because--and I missed the first part and I have to leave after I make a couple of remarks, because I have the worst schedule in the history of the whole week.

[Laughter.]

Economists I think are not entirely in agreement as to whether this is a good thing or a bad thing. So to declare it a bad thing--trying to be a neutral chair as we look at this whole thing--is a point of view, but it's a point of view which I also recognize has some people on the other side of it.

Cybersquatters are an abomination. So are people who abuse children through websites on Facebook and all the rest of it. Lots of abominable people around. But the question is are we going to have hundreds, are we going to have thousands of new names? If you look at dot-com, dot-net, dot-org, and then you sort of go to dot-hotel, dot-baseball, dot whatever it is, how long does that extend out? How much actual difference does that actually make?

I have to be very sensitive to the question of the money that you feel you're going to have to spend to protect yourself against cybersquatters, and I think they're going to be endless. They will go on as long as the Internet goes on. Hopefully they won't blow us up altogether on a worldwide basis, because they can do that, they can shut us down, the Internet can. But that's not the point.

I think we have to get used to dot-hotels, I think we have to get used to dot-auto. I start from that position, but I listen. And I think a surge of new names and addresses can create opportunities. Whether they will or not or whether they will at such a cost-inefficient ratio, I do not yet know. And that's part of what we're discussing today.

If ICANN is determined to move forward, it surely better do so slowly and cautiously, not try to do this in a tranche or two. The potential for fraud, the potential for consumer confusion can lead to fraud without a knowing act, cybersquatting, all of these are massive. Scaling back the initial round of top new-level domains introduced in 2013 may be a prudent approach if that's the way we're going to go.

Companies, nonprofit organizations, and others are rightly concerned that this new landscape will require them to spend money. You have said that. I didn't hear the first three, but karma told me you said that.

So it is my hope that we can phase this expansion over time. If we're going to do it, we should phase it over time, not be regretful after the fact that it was done too hastily. That's the point. If we can make sure that we don't have to look back with regret, then we will have not been too hasty.

You know, that said, there are exciting new possibilities out there. This is intriguing in many ways. Companies and others will be able to place their name. You can get dot-search, dot-banks. I mentioned dot-baseball. I care about that more than I should. And with the current plan, the sky is the limit. That's both the challenge and the threat, from your point of view, and maybe mine.

So as the Senate committee tasked with examining issues related to the Internet, we have to understand what this really will mean for the people you purport to represent, but we all feel that we represent, too, for the millions of Americans who use the Internet on a daily basis and the thousands of businesses and organizations who do exactly the same.

So the matter of unintended consequences strikes me as a very important subject for today. One cannot--if they're unintended, by sort of definition one can assume that they will happen, but one cannot predict absolutely they will happen. An unintended consequence is something which has not yet happened, and it could be a good consequence, it could be a bad consequence, usually bad.

I know ICANN has undergone a very lengthy process on the top-level domain expansion. The decisions will hopefully spur

additional competition and innovation on the Internet. I tend to look upon that as a good thing. However, many in the Internet community--witness what you were saying--don't like the unintended consequences and the manner in which this expansion is being conducted.

So today what we're going to do is discuss those opportunities. It's important to remember that ICANN is nonprofit, and it was established in 1998 at the behest of Department of Commerce. The U.S. Government rightly decided that a private entity representing the interests of the entire Internet community should administer the critical infrastructure of the Internet.

So let us go forward. The multi-stakeholder approach will not work without all of you and without us. We need to have a constructive attitude within ICANN, within NTIA, and the Internet community. So here we are launching on something new. Those who are satisfied with what is the current situation are almost necessarily nervous about a different future. Is it necessary to be nervous about an unknown future when economists cannot agree whether it will be a good thing or a bad thing? I think it's a natural thing, and that's the way you feel and therefore that's what counts. That's what we have to hear.

I remain open to the discussion and grateful to Senator Klobuchar.

Senator Klobuchar. Chairman Rockefeller, in light of time do you want to do your questions now?

Senator Rockefeller. No, thank you.

Senator Klobuchar. OK, very good. And I know Senator Boozman's going to make a few comments here.

STATEMENT OF HON. JOHN BOOZMAN, U.S. SENATOR FROM ARKANSAS

Senator Boozman. Thank you, Senator. I think, in the interest of time, as the Chairman mentioned there's just so much going on, that I will hold off for now.

Senator Klobuchar. OK, very good. And if my other two colleagues don't mind, I think we'll just get started with the questions, and if there is time remaining before we have to end at ten minutes to twelve o'clock, then we'll do some statements at that time, and there may be.

I'm going to get started here. Mr. Pritz, I have some questions about the funds that ICANN will generate through this proposed program for expanding top-level domains. As I understand it, ICANN is charging \$185,000 for each top-level domain application; is that right?

Mr. Pritz. That's correct.

Senator Klobuchar. OK. And then how many applications do you expect to receive? I've heard there could be hundreds. Is that right?

Mr. Pritz. That's right. That number is a matter of great speculation. When we first started making estimates, the number was thought to be 300 to 500. Over time and as interest is generated, I think the number is greater than that now. But that's sort of rumor. We're kind of---

Senator Klobuchar. You thought it was going to be 3 to 5 and it went up to hundreds?

Mr. Pritz. No. We thought it was going to be 300 to 500. I'm sorry.

Senator Klobuchar. 300 to 500. And now---

Mr. Pritz. Now it's greater than that.

Senator Klobuchar. You think it might be thousands now?

Mr. Pritz. Not thousands, but 500 to 1,000 or maybe slightly over 1,000. And that's based on hearsay. A lot of companies that are planning for this are keeping their plans close to the vest, which makes a lot of sense because it's a business strategy. But I know that a lot of large corporations are developing different strategies for taking advantage of the opportunities, and that other segments that are interested are small communities. There is interest in internationalized domain names, which are names in other languages than English to the right of the dot, which will open up some additional opportunities; and also there is---

Senator Klobuchar. What if more than one entity bids for one of these? Then what are you going to do? Like one hotel chain wants to be dot-hotel and another hotel chain wants to be dot-hotel?

Mr. Pritz. That's a really interesting question. It was the matter of a great amount of work. There's really three steps in

what we call a contention resolution process, if two entities apply for the same name. First, the entities are encouraged to work it out between themselves. So rather than other arenas, we encourage them to get together and try to come to some solution, either by combining their efforts or having some other sort of accommodation.

There's also an accommodation for certain types of TLDs that are labeled community TLDs. So recognizing the value that communities bring to the DNS, the policy is to encourage the development of community-type TLDs. TLD applicants that can establish that they are in fact community TLDs by being weighed against certain criteria will be given a preference. So a community TLD would be awarded the TLD before a non-community TLD. And then finally---

Senator Klobuchar. Are you talking like NYC or something like that?

Mr. Pritz. It could. There's criteria in the guidebook that says you have to be part of a longstanding community, that the name you are applying for is really closely related to the community, that you have the support of the community, that there's not--there's not any contradiction from that community. So it's a set of criteria that are really scored.

Senator Klobuchar. What about Ms. Williams' concerns about nonprofits and how difficult it would be for them to compete in this auction process?

Mr. Pritz. So one answer to that is if YMCA qualifies as a community then they would get a preference.

Senator Klobuchar. But do they still have to pay that much money?

Mr. Pritz. Yes, so the \$185,000 is--well, there's two answers to that question. One is the \$185,000 is a cost-based fee, and we've been public about our calculations for how much it costs to receive a top-level domain. They're not to be awarded lightly. You have to meet financial and technical criteria and show you have the wherewithal to actually operate a registry, which is a piece of Internet infrastructure.

But also, ICANN has a support program that the board just recently approved, that for certain deserving candidates the application fee will be lowered from \$185,000 to \$47,000. But admittedly there's a limited amount of funding for this and we're trying to generate more funding, and that's another avenue.

Senator Klobuchar. So if you have these auctions, it could go above \$185,000 if different companies are vying for this name?

Mr. Pritz. So---

Senator Klobuchar. And then what happens with that money if you end up having a big surplus?

Mr. Pritz. So the answer to the first question is, yes. There's a market theory that funds flow to the most efficient use in the market and so the company that bids the highest in the auction would pay a higher price. But we also recognize that by encouraging the entities to negotiate it's more economical for them to arrive at an accommodation than pay an auction fee.

Second, ICANN's been very public about any fees received from auction will be put into a separate fund and the whole Internet community gets to discuss the use to which those funds are put. So ICANN's a not-for-profit, right, so it's a zero-sum game. So those funds might go to fund Internet security projects or combat cybersquatting or other crime or fund other needy applicants, something like that. Those are the things that have been discussed.

Senator Klobuchar. Last question I have. I'm sure you're aware there's been a lot of discussion over the past few months related to potential conflict of interest at ICANN with the departure of a former chair, not Ms. Dyson. What are you doing to respond to those concerns?

Mr. Pritz. Well, first, again two things--and I usually speak in threes. First, ICANN has a very robust conflicts policy. I sit in board meetings. Board members that are conflicted must make a statement of interest and they're often excused from the room in the instances of many discussions. There's a training class for all board members and officers to go through regarding conflicts of interest. So if you were to read the conflicts of interest policy ICANN has, you would find it to be very robust.

Additionally, the ICANN board recently approved an enhancement to that policy where any board member who votes on

or discusses a potential new gTLD application cannot be hired by that gTLD for a period of 12 months after leaving the board. There's also new rules around declaring interest and being excused from conversations and votes.

So in my opinion we're already at a gold standard, but I was recently hired by the board recognizing the concern over that issue.

Senator Klobuchar. And---

Mr. Pritz. Just--I'm really sorry. I also want to say--I'll talk in threes--that there's no evidence that the former chairman had discussions about future employment before he left ICANN. That's sort of the test, that he was exploring that while he was undertaking this policy discussion.

Senator Klobuchar. OK. Well, I want to turn it over next to Senator Boozman, and then I will go to maybe some follow up with the rest of the witnesses. Thank you.

Senator Boozman. Thank you, Madam Chair. With your permission, I would like to defer to Senator Ayotte.

Senator Klobuchar. OK. Senator Cantwell was actually next and I was trying to defer to you as the Co-Chair.

But do you have a time conflict?

Senator Boozman. No, no. Go to her and then come back.

Senator Klobuchar. OK, all right. Then we'll go to Senator Cantwell and Senator Ayotte.

Senator Boozman. I'm sorry. I was just doing time and time.

STATEMENT OF HON. MARIA CANTWELL,
U.S. SENATOR FROM WASHINGTON

Senator Cantwell. Thank you, Madam Chair, and thank you for holding this important hearing.

I guess my questions are a little bit broader than just the subject at hand, although I certainly appreciate everyone's testimony this morning and the policy issues that are at discussion. But I have a broader question about authentication and integrity, because that to me is the issue that we're dealing with at the broadest level, and the new DNS security system and the implementation of that security system seems to me to be a pretty big priority if we want to continue to protect and identify authentication in ways that will help the Internet continue to be the robust vehicle that it is.

Yet some of our colleagues over on the--over on the--it's not "the other side"--maybe it is from the Commerce perspective--on the Judiciary Committee side are looking at Protect IP. So I wanted to ask, Mr. Jaffe, do you believe that the objectives of Protect IP--or maybe even Ms. Dyson. The problem is is that the objectives of Protect IP are counter to the objectives of the DNS security system. And it seems to me if we're always playing whack-a-mole at trying to find out who's doing what, then if you have more domain names you're going to be playing whack-a-mole even more greatly, and the objective here should be enforcing security and implementation.

Is that right, Ms. Dyson? Do I have that right?

Ms. Dyson. Well, fundamentally, there's a bunch of issues here. One is simply for any particular domain name can you find the person or entity who has the economic interest in it and controls it. If the records are not kept properly--and in many cases they're not, and there's no reason to suspect they'd be kept better and a lot of reasons to suspect they'd be kept worse if the system got enlarged--you can't find that person, whether it's a question of fraud and misrepresentation or IP stuff or pedophiles or whatever.

Whatever your opinions on SOPA, these are just orthogonal issues. The challenge with new domain names is there's probably going to be even laxer oversight, because ICANN's resources are already stretched. You've heard that. And in this case this, we really are talking about a tax on the Internet, a tax to support protections against a whole bunch of so-called attractive nuisances that can be created at will.

We have some domain names because it's valuable to have a registration system for the Internet. But creating a whole new set of redundant names isn't useful and leads to people coming in who are not in fact redundant, but are just stealing brand value, trademarks, and all kinds of other value from the rightful owners.

Mr. Jaffe. Senator Cantwell, if I could also interject. Yesterday, as I mentioned, the chairman of the FTC said that this program would be a disaster both for business and consumers. That's a very much stronger statement than he

usually makes in these areas. One of the reasons that he was so concerned is just because of the subject that we're talking about, which is the whole question of authentication.

I'd like to put a chart up just to show you some of the problems that this causes, because there are some technical issues here that need to be understood, but once understood you get the clear view as to why law enforcement groups are truly deeply concerned.

The papers were handed to the staff earlier; if they could provide them to the Senators so that they can actually see, just in case. This is an eye chart and if you could put that up. Yes.

What happens is there's something called the thicker WHOIS program, and that is to let you know who is lying behind the IP addresses. So somebody may be doing things that are causing harm. This certainly happens to many of the companies that we represent, and they spend millions of dollars now to fight this problem.

But when they go to the thicker WHOIS they often find that the names that are there don't lead you anywhere, and therefore, you cannot really resolve the problem. What I'm showing here is not just a picture of Mickey Mouse and Donald Duck, but those are the actual names that as you dug into the thicker WHOIS, you would find. We don't believe that Donald Duck and Mickey Mouse are the ones who are causing the cybercrimes, the cybersquatting, typo squatting, phishing.

So if you don't know that it's somebody other than Mickey Mouse or Donald Duck, then you can't really solve this problem. Despite the fact that ICANN claims that it is going to be tightening up all of these restrictions, as I mentioned in my testimony, of the 12 specific recommendations of the law enforcement community that were given to them to make sure that the registrars and registries were operating appropriately, only three were being even considered and none of them have been acted on.

This is a really serious issue that is going to multiply enormously. You're talking about an exponential increase. You have a terrible problem right now with 22 domains. There are millions, hundreds of millions, of secondary domains. Once you start going to 300 or 500--now we're hearing that it may go much higher. I don't know whether it's going to be a thousand. But whatever that number is, it is an extraordinary increase. If they can't take care of it under the existing situation, why would anybody be able to think that they would?

This is putting an enormous cost on the business community, on the not-for-profit community, and at a terrible time in our economy, where this money should be better used for jobs. That's why we are saying that there should be a pause, that there is not, there is not a consensus. They are supposed to under the Affirmation of Commitments to have a consensus of agreement. If so many people in the business community feel so strongly, the not-for-profit community feel so strongly, if the FTC and other law enforcement groups all feel so strongly, where is this consensus? Who is it that's calling for this?

There is nothing sacrosanct about this January 12 date. We should not leap out at this time in the economy's situation to take this kind of experiment with no reason to believe--their own economists say that the benefits are speculative. But I can tell you from talking to hundreds of our members, hundreds of our members, that they're saying that there's no value here for them.

So there are billions of dollars that are going to be spent and it's not going to be providing a use for the economy.

Senator Cantwell. Thank you, Mr. Jaffe. I know my time has expired, Mr. Jaffe's time, on that question. But I hope that we do make this issue of authentication and the DNS security the number one priority here, because that is what's really, the integrity of the Internet, we need to continue to protect.

So I do look at it in the lens that you just described.

So thank you, Madam Chair.

Senator Klobuchar. Thank you very much, Senator Cantwell.

STATEMENT OF HON. KELLY AYOTTE,
U.S. SENATOR FROM NEW HAMPSHIRE

Senator Ayotte. Thank you, Madam Chair.

I want to follow up with what Senator Cantwell asked about, because I think this is a real deep concern. Mr. Pritz, how do you respond to Chairman Leibowitz's comments he made yesterday

that it would be a disaster for the business and consumer. From my background as the Attorney General of our state, I know what a challenge it is for law enforcement to investigate these types of crimes. It really makes me concerned when I hear things like 12 recommendations made by the law enforcement community to address concerns related to the action you're about to take and only 3 were even considered.

So can you please address these deep concerns that we all have?

Mr. Pritz. Certainly, because we share the same concerns and want to launch this program and create an Internet that's safe, stable, and secure. So there's really several answers. I'm going to just start at the last one. There are 12 law enforcement recommendations that they developed in consultation with ICANN-accredited registrars and right now ICANN is renegotiating the contract it has with registrars to adopt as many of those recommendations as possible.

In fact, since I'm in Washington, D.C., I'm going to leave here and this afternoon the ICANN staff is meeting with registrars, and have our third meeting to discuss not only the 12 law enforcement recommendations, but also recommendations from ICANN's policymaking body for improving registrant protections by changing the contract we have with registrars.

So the number of three is sort of incorrect. Our GNSO is considering three of those recommendations, but in fact in a face-to-face bilateral negotiation ICANN is working with registrars to adopt as many as possible.

Senator Ayotte. One thing that leaps out at me is that we are talking about a January rollout and you're negotiating things that are incredibly important when we think about protecting consumers from fraudulent actions. The Internet is a wonderful tool, but also has been used by predators and other bad actors with ill intent.

So when I hear "negotiations ongoing" for something that's a January rollout, I am concerned why are we rushing into this. So how do you respond to that? And then also I would like to hear you respond to Chairman Leibowitz's comments.

Mr. Pritz. And I will. So the negotiations are targeted at delivering a new registrar accreditation agreement by the springtime. I forget when the ICANN meeting is, but I think it's in March or April. So the timetable for delivering a set of amendments for that is then.

I think the job of improving the safety and security of the DNS, the domain name system, never stops. It's ongoing. Part of what's in our testimony is that many new protections for registrants and for Internet users are embedded in the new gTLD process. So there's a series of trademark protection mechanisms that have been developed by--the great thing about ICANN is if you have a hard problem to solve you can get world-class experts to sit around the table.

So for trademark protections, we sat with 18 well-recognized IP attorneys and developed trademark protections. We also developed a set of malicious conduct mitigation measures that each new TLD will be required to adopt. How did we develop them? We get Internet security experts from the anti-phishing working group and other groups called the Registry Internet Security Group, and FIRST is another one.

So we called experts together, and embedded in this process are substantial protections for trademark holders and then measures to mitigate malicious conduct. Some of those measures are the requirement to adopt this DNSSEC that we talked about earlier, stringent criminal background checks, checks to determine if a new gTLD applicant has had a history with UDRP where he's been taken to arbitration over domain name abuse.

There's an elective security program for institutions, such as maybe a dot-bank that wants to provide higher security. There's a strong incentive for registries to provide searchable WHOIS and a requirement to provide a centralized zone access and I say those two things together because that makes it easier for law enforcement to search data bases and hook up criminal activity.

So all these were meant to provide protections and provide new tools for law enforcement. So that was a great big of work. But I agree with you that the work is ongoing, and that's why we've accelerated. We have these recommendations from law enforcement and we're accelerating this negotiation with registrars and want to bring to you and the rest of the Internet community some results on it.

Senator Ayotte. Well, appreciate results on that, except it

seems to me that these are inherently very, very important issues and it doesn't make sense to me that you'd have a January 12 rollout with outstanding issues that are as important as you describe with respect to the negotiations that will impact important protections for consumers and the law enforcement community.

I would just say it is very challenging for a member of law enforcement to investigate these kinds of cases. As I hear your testimony, you're not even sure how many applications you will have at the end of the day when you open this up. So that is really going to be a challenge when you go from 22 to, who knows, a thousand. And it seems to me that that in and of itself is going to be a huge challenge for law enforcement. It seems to me that caution should be used to make sure that we don't rush into this.

So I appreciate you all coming to testify today on this very important issue.

Mr. Pritz. I didn't answer your last question.

Senator Ayotte. Well, my time is up.

Senator Klobuchar. If you want to, that's fine, if you want to answer it.

Mr. Pritz. Sorry. So we take the comments of Mr. Leibowitz very, very seriously. We've received--as we developed this program, we received comments from representatives from other governments along the same line, and have worked very closely with governments to develop the protections that are here, and intend to monitor.

There's an automatic break in the process. It's slowed down after the first round so that we can measure the effectiveness of the trademark protection mechanisms and the sorts of things that Mr. Leibowitz was talking about. Particularly I know he's talking about improving the accuracy of the WHOIS data, and ICANN has a four-pronged approach to that.

So anyway, we take his comments very seriously. We've heard them from others throughout the development of the program and we pledged to him, and want to have further conversations with him, but to everyone, to monitor this program as it goes to make sure that improvement for law enforcement and for everybody is a continual improvement process and not a one-step process.

Senator Klobuchar. Thank you very much, Senator Ayotte.

I think you've heard today, Mr. Pritz, from--and I have some additional questions--from someone, Senator Cantwell, who spent her life working on protecting the Internet, and now you have two prosecutors up here, who focused very much on consumer issues and crimes. I think you've heard some of our concerns.

I know we don't have--Congress may not be able to stop this, but I think that there are some concerns with this process and what's happened here that are worth listening to.

I wanted to follow up, and I also realize that the three of us also have had the experience--I can say I have--where people try to register your own name, as elected officials. Right now, I don't know how much it costs to get those. It costs us something. This is everything to the left of dot-com. If we had to start paying \$185,000 and get in an auction, Senator Ayotte and me, that would be a whole other problem.

So I think you're hearing some of the concerns that you are going to hear from the public. One of these is this defensive registration idea. Companies, universities, and nonprofit organizations, as I've mentioned, have spent a lot of time and money over the last decade on so-called defensive registrations, registering their names in top-level domains that they never have any intention of using, but because they don't want someone who's committing fraud or someone who's trying to use their name in any way to use it.

For example, Indiana University recently said they are buying 11 names. These include hoosiers.xxx, Indiana University, just to give you a few of them.

I'll start with you, Ms. Williams. Ms. Williams, have the YMCA and other nonprofits felt the need to engage in defensive registration?

Ms. Williams. Yes, Senator, we have. And the question is can we really afford it? When you look at cost and capacity, there is just not a connection in how we can defensively maintain the value of our brand. Our brand is everything. There's the issue of public confusion. In fact, one of our large not-for-profits was recently involved in an issue where another organization registered with their same name, received an Internet domain name, and began raising funds under that

large not-for-profit's name. There was public confusion.

Imagine when this new gTLD program goes into effect, how that could really impact us. So there is absolutely some concern.

The YMCA, we did register ymca.xxx to protect ourselves. But we can't afford to continue to keep trying to do this in order to protect our brand. And when I mentioned capacity, when you think that there are over 1.5 million nonprofits in the United States alone and most of those nonprofits are very, very small, do not have the expertise or the intellectual capacity to even address an exponential growth in the Internet, it's just incredible and, quite frankly, scary.

Senator Klobuchar. Mr. Jaffe, have your companies--I know I've heard from a few, so I think they have. But have they felt forced to make defensive registrations like Ms. Williams mentioned in the nonprofit sector, like we have seen in the government sector?

Mr. Jaffe. Absolutely. And this will, as I said before, will be exponentially increased over time. It just never ends, because we're now hearing that this may be a thousand names. Every time there's a new top-level domain, it generates thousands and thousands and thousands, and maybe even hundreds of thousands of secondary domains. There's 22 top-level domains. There are more than 100 million secondary domains. So if you start to multiply this up, just start to imagine what this means, what do you think this is going to mean for consumers?

I would like to at least respond to something that Mr. Pritz said. The whole effort in regard to these legal issues has been going on for years. Chairman Leibowitz had asked for better WHOIS data since 2003. The GAC proposals have been pending for more than 2 years. Nothing has happened. Why do we think that suddenly we are going to get all of these problems resolved?

I'd like to put up, if I could, one more chart that just shows you how defensive domains work.

Mr. Jaffe. I would put up the pictures. I'm sorry that I don't have a picture of the Senators who are here, but you can be assured that you also are honored by those who have----

Senator Klobuchar. I see you have more senior Senators up there, yes. Senator Ayotte and I note that.

[Laughter.]

Mr. Jaffe. You are also honored by this same effort.

Senator Ayotte. I can assure you we've been subject to it.

Mr. Jaffe. There are people who are out there buying names on the hope that you will be in campaigns or otherwise will want to have the ability to buy your name back, just as companies are going to have to buy their name back. That's what we're talking about here. To protect themselves, they're going to have to take the brands that they have spent billions of dollars to develop and then, so that somebody else will not take those from them, they're going to have to register them, they're going to have to pursue across the whole of the Internet, or they're going to have to buy a Top-Level Domain.

I have been told by a number of companies that they absolutely do not want to do this, they see no value in it, but that they may be forced to do it. And when we're talking about billions of dollars here, when we're talking about companies with 3,000 or more brands, even big companies will be facing really large expenses.

So this is a very, very significant economic issue for this country and for the world. And as you can see----

Senator Klobuchar. And that's FrankLautenberg.com waiting to be adopted? They're just suggesting this could be bought by anyone?

Mr. Jaffe. Yes. It exists, but they're offering it for sale to anybody who wants it, and that doesn't have to be Frank Lautenberg. That doesn't have to be Senator Klobuchar, or that doesn't have to be Senator Ayotte.

Senator Klobuchar. I understand that. That didn't look like Frank Lautenberg.

Mr. Jaffe. Whoever has it, if you want it back I'm sure they'll be willing to sell it to you for a very high price.

Senator Klobuchar. Yes.

Mr. Pritz--do you have any other questions, Senator Ayotte?

Senator Ayotte. No, thank you.

Senator Klobuchar. Mr. Pritz, do you want to respond to this cost of defensive registrations, what this could mean if you start opening up the right side of the dot to even more

names, and the multiple names that you may have to buy to defend yourself?

Mr. Pritz. Surely. It's a very, very important issue and it's taken up a lot of time over the last several years. There's--and we've undertaken economic studies and those studies indicate and all the evidence indicates that there's not going to be a dramatic increase in the need for defensive registrations, and I'll try to explain why.

First--again, it's two-pronged. First, there's a set of trademark protections that have been developed by IP experts, all targeted at providing relief for people that have an interest or a property right in a name, making it possible for them to protect their name without a defensive registration. So there is a notice to anybody who tries to register a registered trademark. There is a rapid takedown system that's cheaper and faster than the current UDRP system for taking down trademarks. There's a post-delegation, it's called, post-delegation dispute resolution process, where property owners can go directly after registries, not after the registrants, if the registries are actively involved in cybersquatting or some other crime.

And there's others. So there's a set of trademark protections that, again the beauty of ICANN, developed by experts, to target this problem.

The other part of it, though, really is the architecture of the Internet. Where does this abuse take place? It takes place in the very largest registries, because that's where the abuse pays off. Typo squatting occurs because people type in--people still type in addresses into their browser, and they type in "ymcaboys.com" or "ymcacamp.com," and so those are names registered by typo squatters. But that occurs only in common.

Historically, property owners, property rights owners, have not registered those types of defensive registrations in smaller new TLDs or new TLDs simply because it doesn't pay off.

Senator Klobuchar. OK. I'm just trying to picture this. Maybe if you're a Hilton or Marriott or you're 3M and you get this notice that someone's using your name-dot, you're going to be able to respond. But I'm picturing--my fear on those domain names, when we bought a bunch of them defensively, was that somehow we'd miss them in the post office box. And I'm just trying to picture small businesses or nonprofits that wouldn't get this notice and someone just buys the name for \$185,000.

Ms. Dyson.

Ms. Dyson. So I'd like to tell very briefly the story of meetup.com. We have about 60 employees. We tried to register meetup.xxx for precisely all these reasons. We were told that "meetup" was such an attractive name for dot-xxx that it was on some kind of reserved list, so we can't even register it defensively. We can wait for someone to buy it and then we can file a trademark lawsuit. That to me is not a satisfactory approach, and that's for the existing dot-xxx, not even for the new ones.

Senator Klobuchar. All right. In June of 2010 three economists from Berkeley, Stanford, and the private sector submitted a study to ICANN--we've been talking about studies here--that a slower rollout of Top-Level Domains would help address concerns about this new application window. They said, in their words: "By proceeding with multiple rounds of application, the biggest likely cost, consumer confusion, and trademark protection can be evaluated in the earlier rounds to make more accurate prediction about later rounds."

I think Senator Ayotte was talking about waiting until some of these, at least these law enforcement and other things, resolve. But what about this idea of doing this in rounds or trying as you've expanded? I think my staff told me in the year 2000 and the year 2004 to get to your total of 22--to seem to go up to thousands of names before you have even these agreements worked out--you can understand why you're hearing concerns from these Senators.

Mr. Pritz, what is ICANN's response to the analysis from 2010?

Mr. Pritz. We fully commit to evaluating the effectiveness of trademark protections after an initial round, and in fact have committed to that with our governmental advisory committee.

Senator Klobuchar. What would the initial round be when you're talking about over a thousand now?

Mr. Pritz. No. So the initial round--so the new gTLD introduction is limited by rounds. So we will have--and it's also limited by demand. So an application window will open on

January 12 and it will close on March 12. During that time period we will receive applications for which there is demand.

Then after that we'll process those applications, do studies, and feed that back.

Senator Klobuchar. So you don't have a number limit on it?

Mr. Pritz. That's correct. So we did a round in 2000 and in 2004. The 2000 round was limited by number. We chose 7 out of 200 applications. The round in 2004 was limited by type. They were limited to like a community type of TLD.

Senator Klobuchar. What's this limited by?

Mr. Pritz. In those two rounds, we found that the benefits expected were not realized because those rounds were curtailed. It also put ICANN in the position of being a decisionmaker, making it sort of a beauty contest and ICANN deciding between winners or losers.

So this time we want to allow all TLD applicants who apply that meet very stringent criteria. So our limitation is a very high bar. They have to meet stringent technical and financial criteria to show, like I said before, the wherewithal to run a registry. So it's a significant undertaking. And we've sought, through this big fat applicant guidebook, to educate potential applicants into all the requirements that they have to meet, in addition to the new--in addition to the new protections.

Senator Klobuchar. Do you want to respond to this idea, Mr. Jaffe, Ms. Dyson, Ms. Alexander, about the rounds?

Mr. Jaffe. I would just like to draw the Committee's attention to a letter that was sent last night to the Department of Commerce. It was from the renowned economist Dr. Robert E. Hall, who's the Joint Professor of Economics at Stanford University and Senior Fellow at Stanford's Hoover Institution, and he was the 2010 President of the American Economic Association. He did this in conjunction with Michael A. Flynn, another expert economist.

This is what their conclusion was: "An unlimited expansion of gTLDs would not add anything material to product variety facing Internet users. It would merely create a costly nuisance for those users. ICANN is sponsoring a perversion of the economic analysis that it commissioned by even suggesting that this nuisance has net benefits for the Internet community."

Doctors Hall and Flynn then go on to urge the Secretary of Commerce, "to take action to block the unlimited expansion of gTLDs" unless and until ICANN can demonstrate, "that any such expansion or a limited expansion on a case by case basis would be in the public interest and that the benefits to any expansion would exceed the clear costs that the expansion would impose on the global multi-stakeholder community that ICANN serves."

[The material referred to follows:]

AFE Consulting
Oakland, CA, December 7, 2011

Hon. John Bryson,
Secretary,
U.S. Department of Commerce,
Washington, DC.

Dear Secretary Bryson:

AFE Consulting, at the request of the Association of National Advertisers (ANA), is carrying out an economic analysis of ICANN's announced intention to allow and encourage a virtually unlimited expansion of the Domain Name System (DNS) by adding many hundreds of new generic Top Level Domains (gTLDs) to the 22 already in existence and to continue to expand the number of gTLDs by the thousands in later years. The authors of this letter are professional economists leading the AFE study. We have reached the conclusion that this dramatic alteration in the landscape of the Internet would be contrary to the interests of both consumers and businesses. Our brief biographies are attached at the end of this letter.

ICANN's authority to consider the possible expansion of the number of gTLDs dates back to the November 25, 1998 Joint Memorandum of Understanding between the U.S. Department of Commerce and ICANN. We believe it is critical to keep in mind this foundational document, which, among other provisions, requires ICANN to:

Collaborate on the design, development and testing of a plan for creating a process that will consider the possible expansion of the number of gTLDs. The designed process should consider and take into account . . . potential consumer

benefits/costs associated with establishing a competitive environment for gTLD registries.\1\

\1\ Memorandum of Understanding Between the U.S. Department of Commerce and Internet Corporation for Assigned Names and Numbers, November 25, 1998.

In December 2008, as ICANN proceeded with its plans for the introduction of new gTLDs, the U.S. Department of Commerce wrote to

ICANN's Chairman Peter Dengate Thrush:

[I]t is unclear that the threshold question of whether the potential consumer benefits outweigh the potential costs has been adequately addressed and determined. In that regard, we would like to call to your attention a decision of the ICANN Board on October 18, 2006, that called for an economic study to address [this and related questions] . . . ICANN needs to complete this economic study and the results should be considered by the community before new gTLDs are introduced.\2\

\2\ Letter to Peter Dengate-Thrush from Meredith A. Baker, December 18, 2008.

Following its receipt of that December 2008 letter, ICANN acknowledged that:

[S]everal members of the ICANN community requested that ICANN commission economic studies that would specifically address the possible economic consequences of new gTLDs. . . Accordingly, ICANN retained the services of economist Dennis Carlton, who recently had served as the chief economist to the United States Department of Justice Antitrust Division.\3\

\3\ ICANN, Rationale for Board Decision on Economic Studies Associated with the New gTLD Program, March 21, 2011, at page 3.

Thereafter, in March 2009, Carlton issued a report in which he concluded, generally, that:

ICANN's proposed framework for introducing new TLDs is likely to improve consumer welfare by facilitating entry and creating new competition to the major gTLDs such as .com, .net, and .org. Like other actions that remove artificial restrictions on entry, the likely effect of ICANN's proposal is to increase output, lower price and increase innovation. This conclusion is based on the fundamental principles that competition promotes consumer welfare and restrictions on entry impede competition.\4\

\4\ Preliminary Report of Dennis Carlton Regarding Impact of New gTLDs on Consumer Welfare, March 2009, at pages 2-3, available at <http://www.icann.org/en/topics/new-gtlds/prelim-report-consumer-welfare-04mar09-en.pdf>.

But in his series of reports, Carlton never squarely addressed or analyzed whether or not the potential future benefits of ICANN's gTLD expansion would outweigh the future costs.

To remedy this shortcoming (of which many took notice), ICANN turned to Michael Katz \5\ and Gregory Rosston for additional economic analyses. They submitted a series of three reports in June 2010, December 2010 and February 2011. In their third report--the final economic analysis of the new gTLDs received by ICANN--Katz and Rosston conceded:

\5\ Katz had also served as the chief economist of the Justice Department's Antitrust Division.

[O]ur report does not conclude that benefits will exceed costs for new gTLDs as a whole. . . . The purpose of [our report] is to lay out a structure within which to think about the benefits and costs of new gTLDs.\6\

\6\ Michael L. Katz, Gregory L. Rosston and Theresa Sullivan, Reply to Comments on An Economic Framework for the Analysis of the Expansion of Generic Top-Level Domain Names, February 21, 2011, at page 3 (emphasis added), available at <http://www.icann.org/en/topics/new->

They added:

[Our report] summarized prior studies on issues relevant to the introduction of new gTLDs. The report identified shortcomings of specific studies and concluded that existing studies were incomplete. The central finding was that additional information should be collected.\7\

\7\ Id. at page 4 (emphasis added).

At the end of this series of economic reports that ICANN itself had commissioned, ICANN reported:

Ultimately, ICANN obtained reports from several economists, including some of the world's leading economists who specialize in competition issues. . . [T]he studies made clear that the economists did not anticipate that the costs that might be associated with new gTLDs would outweigh the overall benefits of their introduction, and determined that it was too difficult to predict. . . As a result, ICANN's Board has concluded that there is no economic basis that would justify stopping the New gTLD Program from proceeding and no further economic analysis will prove to be any more informative in that regard than those that have already been conducted.\8\

\8\ ICANN Rationale at page 1.

The Carlton and Katz-Rosston reports reflect almost no actual investigation of the practical effects of the huge expansion of gTLDs that ICANN plans. It is an axiom of competition analysis that any such analysis must rest on a factual background. Moreover, these reports do nothing to demonstrate that general principles that apply in many markets actually apply to the unique nature of gTLDs and the scale of ICANN's planned increase in their number. A new gTLD is not a product in the sense that a new electric car is a product.

Domain names like NYTimes.com are essentially trademarks. They are small fragments of text that consumers associate with the products and services of businesses and organizations on the Internet. By convention, Internet domain names ("trademarks") have two parts separated by a period. On the left is a brief version of a product or business name and on the right is the gTLD (or non-generic TLDs such as country codes that are not at issue today).

From the perspective of the consumer, a second-level domain, such as NYTimes, connected to a given gTLD, such as .com, is essentially the same as NYTimes.info or NYTimes.biz. Competition based on differentiation of only the gTLD is expressly prohibited by trademark law and by the rules of ICANN, which has procedures that can lead to cancellation of such registrations by a non-owner of the left side of a domain name, but only after the owner successfully brings a legal action against the registrant of the infringing domain name. This key, undisputed principle of the Internet--essential to its usefulness to Internet users--refutes the simplistic Carlton claim that adding gTLDs, ipso facto, increases competition, improves product variety and provides more choice to consumers.

As the ICANN economists noted, the gTLDs added by ICANN in the last decade have attracted relatively few registrations, and the overwhelming majority of these merely duplicate second-level domain names already registered under .com. They add little or nothing to the benefits that brand owners and consumer achieve from the Internet. Today, many Internet users find desired websites by running searches on Bing, Google, or other search engines. They don't type in NYTimes.com, they just type in "NYTimes", or "New York Times" or "NY times" or even just "times" (try it--on Google, NYTimes.com is the second search result for a search on "times"). It adds absolutely nothing if the search engine then offers them a choice between NYTimes.com and NYTimes.biz.

An analogy to printed brand names may be useful in explaining why the extreme proliferation of gTLDs is contrary to the interests of Internet users. Under existing trademark law, a registration of a brand name, say "Tide", also protects the name in other type fonts, such as "Tide" and "Tide" and "TIDE" and "Tide". The differences in type fonts are analogous to the gTLD name after the dot in a domain name. They are differentiating markers that do not alter the sense of the brand name and mean almost nothing to the consumer.

The addition of gTLDs is as if a company other than Procter &

Gamble could register "Tide" as a trademark and use it until Procter & Gamble discovered the misuse and filed a legal proceeding against it. Under ICANN's plan to expand the number of gTLDs, Procter & Gamble would either need to preempt such misuse by paying to register "Tide" defensively under these new gTLDs, or it could elect to spend the time and resources needed to detect such registrations after the fact and then incur the expense of dealing with them individually as they are discovered. And even this assumes that it is possible to determine ultimately who the registrant is, something that is not always possible with the Who-Is databases available today.

Of course, it is true, as ICANN has said, that both trademark law and ICANN's procedures for dealing with cybersquatting would be available to domain-name registrants. But the proliferation of gTLDs would raise the monitoring costs of domain-name owners. ICANN has acknowledged that such proliferation would raise costs, but nevertheless maintains--without any quantification of either costs or user benefits--that the benefits would exceed these costs.

In fact, the benefits, as we have demonstrated above, are negligible. The costs are not. Of course, the proliferation of gTLDs will create profit opportunities for companies that offer domain name registration and consulting services as they process defensive registrations under the additional gTLDs. The revenue these companies will derive from either defensive or infringing domain registrations--and the motivation behind these registrations would appear to be a matter of indifference to such companies--is a cost to legitimate domain-name owners.

Our analysis to date shows that an unlimited expansion of gTLDs would not add anything material to the product variety facing Internet users. It would merely create a costly nuisance for those users. ICANN is sponsoring a perversion of the economic analyses that it commissioned by even suggesting that this nuisance has net benefits for the Internet community. We therefore urge you to take action to block the unlimited expansion of gTLDs unless it is satisfactorily and transparently demonstrated that any such expansion--or a limited expansion on a case-by-case basis--would be in the public interest and that the benefits to any expansion would exceed the clear costs that the expansion would impose on the global multi-stakeholder community that ICANN serves.

Respectfully submitted,

Robert E. Hall
Michael A. Flynn

cc: Lawrence E. Strickling, Assistant Secretary for Communications and Information and Administrator, National Telecommunications and Information Administration, U.S. Department of Commerce

Fiona Alexander, Associate Administrator, National Telecommunications and Information Administration, U.S. Department of Commerce

Vernita Harris, Deputy Associate Administrator of the Office of International Affairs, National Telecommunications and Information Administration, U.S. Department of Commerce

Suzanne Murray Radell, Senior Policy Advisor, National Telecommunications and Information Administration, U.S. Department of Commerce

Elizabeth Bacon, Telecommunications Policy Specialist, National Telecommunications and Information Administration, U.S. Department of Commerce

Cameron F. Kerry, General Counsel, U.S. Department of Commerce

John D. Rockefeller IV, Chairman, Committee on Commerce, Science and Transportation, U.S. Senate

Kay Bailey Hutchison, Ranking Member, Committee on Commerce, Science and Transportation, U.S. Senate

Amy Klobuchar, Chair, Subcommittee on Competitiveness, Innovation and Export Promotion, Committee on Commerce, Science and Transportation, U.S. Senate

Daniel K. Inouye, Chairman, Committee on Appropriations, U.S. Senate

Thad Cochran, Ranking Member, Committee on Appropriations, U.S. Senate

Patrick J. Leahy, Chairman, Committee on the Judiciary, U.S. Senate

Charles E. Grassley, Ranking Member, Committee on the Judiciary, U.S. Senate

Barbara Mikulski, Chair, Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations, U.S. Senate

Al Franken, Chairman, Subcommittee on Privacy, Technology and the Law, Committee on the Judiciary, U.S. Senate

Tom Coburn, Ranking Member, Subcommittee on Privacy, Technology and the Law, Committee on the Judiciary, U.S. Senate

Ron Wyden, Chairman, Subcommittee on International Trade, Customs, and Global Competitiveness, Committee on Finance, U.S. Senate

Harold Rogers, Chairman, Committee on Appropriations, U.S. House of Representatives

Fred Upton, Chairman, Committee on Energy and Commerce, U.S. House of Representatives

Henry A. Waxman, Ranking Member, Committee on Energy and Commerce, U.S. House of Representatives

Greg Walden, Chairman, Subcommittee on Communications and Technology, and Technology, Committee on Energy and Commerce, U.S. House of Representatives

Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology, Committee on Energy and Commerce, U.S. House of Representatives

Lamar Smith, Chairman, Committee on the Judiciary, U.S. House of Representatives

Norm Dicks, Ranking Member, Committee on Appropriations, U.S. House of Representatives

John Conyers, Ranking Member, Committee on the Judiciary, U.S. House of Representatives

Bob Goodlatte, Chairman, Subcommittee on Intellectual Property, Competition and the Internet, Committee on the Judiciary, U.S. House of Representatives

Frank Wolf, Chairman, Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations, U.S. House of Representatives

Mel Watt, Ranking Member, Subcommittee on Intellectual Property, Competition and the Internet, Committee on the Judiciary, U.S. House of Representatives

Chaka Fattah, Ranking Member, Subcommittee on Commerce, Justice, Science and Related Agencies, Committee on Appropriations, U.S. House of Representatives

Robert E. Hall

Robert E. Hall is the Robert and Carole McNeil Joint Professor of Economics at Stanford University and Senior Fellow at Stanford's Hoover Institution. He served as President of the American Economic Association for the year 2010, served earlier as the Association's Vice President and Ely Lecturer, and is now a Distinguished Fellow of the Association. He is an elected member of the National Academy of Sciences and Fellow of the American Academy of Arts and Sciences, the Society of Labor Economists, and the Econometric Society, the professional organization of economists specializing in measurement issues. He is Director of the Research Program on Economic Fluctuations and Growth of the National Bureau of Economic Research. He was a member of the National Presidential Advisory Committee on Productivity. For further information about his academic activities, see Stanford.edu/rehall. He received his Ph.D. in economics from MIT and his BA from the University of California, Berkeley.

Professor Hall is co-author of the college textbook Economics: Principles and Applications, now in its fifth edition, and author or co-author of numerous articles in the American Economic Review, the Journal of Political Economy, and other academic journals.

Professor Hall has advised a number of government agencies on

national economic policy, including the Treasury Department, the Federal Reserve Board, and the Justice Department, and has testified on numerous occasions before congressional committees.

Michael A. Flynn

Mr. Flynn is a consulting and testifying expert economist, specializing in antitrust, economic damages, intellectual property and other complex business litigation and consulting engagements. He has extensive case experience in a broad range of industries, markets and products. Mr. Flynn studied in the PhD Program in Economics of the Massachusetts Institute of Technology, Cambridge, Massachusetts, from 1971 to 1974, where he was a National Science Foundation Fellow. He completed his general and field examinations for the PhD degree in 1974. Mr. Flynn was awarded his AB degree from the University of California, Berkeley, where he was the 1971 recipient of the Department of Economics Citation as the Outstanding Graduating Senior.

Mr. Jaffe. I'd like to add just one point. It seems to me incredible that they are suggesting that the failure of their earlier proposals where they did a beauty contest, where they tried to select what they thought were going to be the most economically viable programs, and that they failed, then argues for us blowing open the doors, while we still do not have the protections that we need to fight against some of these cybercrimes, and say that this will then be looked at after we find whatever damage has been caused.

Senator Klobuchar. Ms. Alexander, can the Secretary of Commerce stop ICANN from doing this?

Ms. Alexander. Thank you very much.

Senator Klobuchar. That's what this quote was.

Ms. Alexander. Thank you very much, Senator. I haven't seen the letter if it arrived last night.

I think the role of the Department of Commerce is not to substitute our judgment for ICANN's. We've tried to very actively participate in the process. I think it's important to understand, though, too, while the application window starts in January and closes in April, then there's going to be a processing of the applications. We've read the applicant guidebook and we've mapped out eight or nine different scenarios of the paths an application could take.

An application with no problems and no objections will still take 9 months to process. So the earliest any new TLD will actually be operational on the root will be January of 2013.

Senator Klobuchar. Yes, but you're having people put in \$185,000 and at least spend all this money on applications. Are you implying like we'd stop in the middle, that you'd stop in the middle?

Ms. Williams. I think there's going to be--there's going to be a natural evolutionary, slow introduction of them anyway. And while ICANN has committed to do a review of their program with the GAC, they're also required under agreement with the Department of Commerce to do a review of the entire program a year after the first TLD's in the root. So there will be this process where we can have checks and balances to make sure.

We obviously take very seriously the concerns expressed by Mr. Jaffe and others.

Senator Klobuchar. Also, the other thing we've heard is the FTC Chairman and others as well. So I'm just trying to figure out if this gets started, I'm not sure you're going to be able to stop it in the middle. Maybe you can.

Ms. Williams. Mr. Leibowitz's comments yesterday are very consistent with the comments we've been raising inside the GAC. In fact, Mr. Leibowitz's staff is very much involved with us in the process. That's in fact why many of the changes were made to the ICANN program.

I think what we're looking at really is effective implementation and monitoring of this effort, and we think it's wholly appropriate for Mr. Leibowitz going forward to make sure that ICANN lives up to these things to protect consumers. For our part, that's what we'll be doing, working with consumers and law enforcement to make that happen.

Senator Klobuchar. My original question, though, was about this, this way of rolling it out slowly. Ms. Dyson, did you want to answer that?

Ms. Dyson. Sure. As the founding chairman of this organization, I'm extremely disappointed in its inability to do what we set out to do, which was to have a clean and open and transparent market for a limited, valid set of domain names. The slow-rolling expansion, as Mr. Jaffe just said, showed it

wasn't working, and I don't think it's going to work better whether we do it fast or slow.

The problem is, you've heard Mr. Pritz describe all these elegant processes and all these policies, but they haven't resulted in a clean and open market and I don't see why anything different is going to happen if we have more such TLDs.

And I want to address one other issue, which is the talk about innovation, that we need more domain names to innovate. I'm in the venture capital community. There's huge amounts of innovation. There are new name spaces. Twitter.com has a new name space. Federal Express has a name space of packages IDs. Amazon has a name space for books. You don't need to pervert the domain name system, which is an artificially scarce resource controlled by ICANN, in order to innovate elsewhere. People like Twitter and Amazon earn those rights through value creation. This is what I like to see: real innovation, where you don't buy a name for \$200,000 and then spend a few millions defending it, where you actually create something new. And for that you don't need a new TLD.

Senator Klobuchar. Mr. Pritz, obviously a lot of people, we're on the Commerce Committee, we like innovation. But I'm just trying to figure out. Clearly, there are many that are concerned in the nonprofit community about the cost of this, as Ms. Williams has articulated. And we've also heard from businesses that are concerned. Who's really pushing for this? Is there division in the nonprofit community? Is there division in the business community? Is it people who are focused on a free and open Internet, which we all are up here?

I just want to--I want to understand the motivation. Who are the groups pushing for this?

Mr. Pritz. A point I wanted to make at the end and I missed making earlier is, in our testimony when we talk about a consensus-based process and that there's a consensus for launching this program in this manner, those consensus opinions are hard-fought and hard-won. ICANN is a very noisy environment and it's all those groups you mentioned--IT attorneys, corporations, not-for-profits, noncommercial----

Senator Klobuchar. They have said they want to expand to over a thousand? I'm just trying to understand how we got where we are, because obviously Congress, for a change, didn't get us exactly here. And I want to know how we got where we are and who's been pushing it, because it didn't come through the political process so I'm somewhat naive about how you got where you are.

Mr. Pritz. So it came through the ICANN political process.

Senator Klobuchar. Yes.

Mr. Pritz. But that policymaking body, it's a bottom-up policymaking process. That policymaking body has representatives that are appointed by all those stakeholder groups or constituency groups. I could list them: IP, business, noncommercial, not-for-profit, Internet service providers, registries and registrars. Each one of those stakeholder groups appoint representatives to those policymaking bodies, where in this particular instance they undertook this formal bylaw-regulated policymaking process, and over a period of 19 months developed, ironically, 19 policy recommendations.

The most highly debated one was the answer to the first question: Should there be new TLDs and, if so, how should they be restricted? What you see in front of you is the opinion to restrict them by rounds, set a high bar, make sure they have the wherewithal. Those policymakers have discussions at ICANN meetings and in teleconferences that occur once a month, and then they go back to their constituency groups and meet with them and bring back opinions.

You know, many of the corporations that we're talking about today, they're also represented in those policymaking bodies and took part in this.

Senator Klobuchar. And how about the non-profits and groups that are very focused on a free and open Internet?

Mr. Pritz. The not-for-profit constituency group that we're really pleased to have and have some of the most dynamic people in ICANN is new, but the noncommercial constituency is very much for an open Internet and for the introduction of new gTLDs. In fact, the sole dissenting voice in the final consensus opinion was from the noncommercial that said it's not open enough, we're being too restrictive with our limitations and protection of rights of others.

So really it was a broad-based, hard-fought battle, if you

can imagine, by a very noisy group of stakeholders that are-- anybody can come to the microphone at an ICANN meeting and talk directly to the Chair, and the Chair sits there and responds in a dignified way.

Senator Klobuchar. I think sometimes what happens, just from judging what happens around here, everyone works on it in a room, people do come, and then all of a sudden they get the final product and then everyone steps back and looks at it a little bit. That's probably what you're hearing today from the Senators up here, who have been really exposed to this outcome for the first time, and what you'll probably hear in the weeks to come from some of the groups, is my prediction, and the public, and I think there's going to be an additional hearing as well.

So I just hope, given that I think there's issues about what the Congress or anyone could do about your group, which has been set up to do this to begin with, but I'm hopeful that you will listen to these concerns as we move forward. Will you? Will you listen to the concerns as we go forward?

Mr. Pritz. I certainly will. And I want to tell you how passionate everyone is at ICANN, and when I talk about ICANN it's the big ICANN with all its stakeholders, are concerned about this issue and have worked very hard on it.

Senator Klobuchar. OK.

Ms. Williams.

Ms. Williams. Senator, I just wanted to point out that, ICANN's credit, they did recognize that the not-for-profit arena's voice had not been heard. But we weren't officially recognized until June of this year. June of this year, the train had already left the station, and there are several iterations of the applicant guide and we weren't allowed to be able to contribute to having the not-for-profit world recognized, the issues around cost, the issues around defensive registrations.

In fact, if you take a look at what ICANN has put forward in terms of being able to protect one's brand, there are still--it's still fuzzy. There are still some incredible gaps. There are still opportunities for cybersquatters to come in that have the funds to be able to take the venerable names of not-for-profits, and we will be stuck.

For example, if--there is a rapid takedown process that ICANN has discussed. If someone comes in and takes a dot-ymca something, that can be taken down and then it sits dormant. But then it goes back out into the public for purchase again by another cybersquatter. So it doesn't even allow nonprofits to reserve their name and not have someone come in and take it.

I can't tell you what the specific answer is, but there has to be something done on behalf of our sector to protect us. We do not have the funds to be able to do this.

Senator Klobuchar. OK. I'm going to--OK, the last two comments here briefly and then we're going to conclude.

Ms. Dyson. Just finally, in all this process the end-users, the billions of people, not the thousands and millions of companies, but the billions of end-users who stand to gain nothing from being confused, haven't been heard.

Senator Klobuchar. Thank you. I think that's the beginning of this process.

Mr. Pritz. Right.

Senator Klobuchar. All right.

Mr. Pritz. What is required of ICANN under its affirmation of commitments is a consensus. What you're hearing here is that a very, very broad representation of the business community and the international business community is concerned. You've just heard that the not-for-profits are concerned. They have stated that they have talked to all sorts of groups. I'd just like to quote one more thing into the record to show that this is--and it is short, Senator, I understand the time circumstance--but to show that there is is not the consensus, there is no consensus behind this proposal, which is a radical proposal.

This is from the IRT, which deals with the trademark issues, and they were asked to look into this issue, which was a good thing. But they wanted to make very clear with the report: "Was it because we support the concept of the expansion of the gTLD space unreservedly? Hardly. The views of the IRT reflect the views of business and trademark interests in general. A sizable number"--let me emphasize that--"A sizable number of our team would have preferred status quo, with no new gTLDs, until better rights protection mechanisms are in place for the existing gTLDs. Others favored the

measured"--what you were talking about--"measured introduction of sponsored or community-based gTLDs."

And then they said: "Some support the current expansion, seeing the advantages for commerce and the consumer for open competition and innovation."

That is not consensus. ICANN then decides among all these different groups who have different views who wins, and guess who always wins? It is always the group that wants expansion. That is what drives the whole system. That's what the registrars and registries get almost all of their money from. That's where almost all the money for ICANN comes from.

So we think there's a very strong bias to always expand and always say the consensus is here. We don't see any consensus of the community.

Thank you very much.

Senator Klobuchar. All right. Well, this has been an incredibly good discussion. I want to thank you all for being here. I have to say, I raised this issue this morning with my attendees at my Minnesota breakfast that we have every Thursday. I thought I'd get something of a yawn, but actually some of them showed up at the hearing, and then also a number of them came up to me and asked questions, making me think that the public actually would be interested in this issue, and I think it's something that they understand.

We all know that the Internet is one of the great American success stories. Its beginnings can be traced to a program at the U.S. Department of Defense. In only a few short decades the network of networks has expanded in leaps and bounds, reaching people around the globe. The Internet has transformed not only how we communicate with friends and family, but also the way companies do business, how consumers buy goods and services, how we educate our children. It's a powerful engine for economic growth and a great democratic tool that citizens everywhere are using to empower their communities.

And I believe the job of ICANN and the job of the administration, the job of this Congress, is to make sure that we protect that Internet so it can be used by all.

So I want to thank you so much. We look forward to working with you. We may have some follow up questions in writing to follow up on some of the answers that we got today, so we will leave the record open for a week. Thank you.

This hearing is adjourned.

[Whereupon, at 12:10 p.m., the hearing was adjourned.]

A P P E N D I X

Response to Written Questions Submitted by Hon. Maria Cantwell to
Fiona Alexander

Question 1. Ms. Alexander, one of the purposes for DNSSEC is to ensure that the recipient can validate that the data from any domain name comes from the owner of that name and that it arrived at its destination unchanged from end-to-end. The recipient should be assured he or she is going to Internet site they are seeking to go to and not being re-directed to another site.

There is legislation reported out of the Judiciary Committee called the PROTECT IP Act that requires the use of filtering to re-direct end users who want to reach blacklisted Internet sites that are "dedicated to infringing activity" to a site that includes a statement by Department of Justice that the site was determined to be dedicated to infringing activity plus pointers to some to be determined information and resources.

Does the Administration have a position on whether it believes that the re-direction required under the PROTECT IP Act as reported by the Senate Judiciary Committee is incompatible with how DNS SEC is currently designed to authenticate domain names?

Answer. The Administration believes that online piracy by foreign websites is a serious problem that requires a serious legislative response, but will not support legislation that reduces freedom of expression, increases cybersecurity risk, or undermines the dynamic, innovative global Internet. Legislation must avoid creating new cybersecurity risks or disrupting the underlying architecture of the Internet. In addition, proposed laws must not tamper with the technical architecture of the Internet through manipulation of the Domain Name System (DNS), a foundation of Internet security. The Administration's analysis of the DNS filtering provisions in some proposed legislation suggests that they pose a real risk to cybersecurity and yet leave contraband goods and services accessible online. Legislation must avoid driving users to dangerous, unreliable DNS servers and puts next-generation security policies, such as the deployment of DNSSEC, at risk.

Question 2. Given that many of the expected hundred of new domains created will be owned and operated by non-domestic entities, does the Administration believe that PROTECT IP Act as reported by the Senate Judiciary Committee will be effective in stopping non-domestic Internet sites dedicated to infringing activities?

Answer. Please see response to Question 1.

Question 3. Does the Administration have a position on whether it believes that PROTECT IP as reported by the Senate Judiciary Committee will strengthen, weaken, or have no change on efforts to make the DNS more secure for consumers and business?

Answer. Please see response to Question 1.

Question 4. What is the status of DNS SEC implementation for the Federal government?

Answer. The Department of Commerce's long-running effort to support the deployment of DNSSEC has included NTIA's work with ICANN and VeriSign in signing the authoritative root zone file which has facilitated broader DNSSEC deployment. The Federal Information Security Management Act (FISMA) guidelines require all Federal agencies to deploy DNSSEC. The Department of Commerce's National Institute of Standards and Technology (NIST) and the Department of Homeland Security (DHS) regularly measure DNSSEC deployment within the Executive Branch of the Federal government and their compliance with FISMA. According to their data, 35 agencies have fully implemented DNSSEC and 23 agencies have partially implemented. Fifty-one agencies are not yet compliant. The Department is currently 78 percent compliant with FISMA requirements and is working towards full compliance.

Response to Written Questions Submitted by Hon. Olympia J. Snowe to
Fiona Alexander

United Nations Model

Question 1. There has been a growing contingency of other countries critical of the ICANN multi-stakeholder model and about the U.S.' involvement and influence with ICANN. Some governments, not necessarily friendly to the U.S., are seeking to increase their power over the Internet and its governance.

Russia and China (with Tajikistan and Uzbekistan) have proposed to the United Nations an Internet "Code of Conduct," to which a senior State Department official stated "they seek to justify the establishment of sovereign government control over Internet resources and over freedom of expression in order to maintain the security of their state." ¹ Even Russian Prime Minister Vladimir Putin remarked recently his desire of "establishing international control over the Internet using the monitoring and supervisory capabilities of the International Telecommunication Union (ITU)." ²

¹ http://www.huffingtonpost.com/2011/09/27/russia-china-internet-control_n_984223.html.

² <http://premier.gov.ru/eng/events/news/15601/>.

The other proposal by India, Brazil, and South Africa calls for the creation of a new body within the United Nations to oversee Internet policy. As a result, ICANN as well as the Internet Governance Forum (IGF) could be significantly marginalized or hijacked by this new UN entity.

These proposals seem to be in direct conflict with our Nation's effort to privatize the Internet through transferring the authority of the DNS to the private sector and for the Internet governance model to be private-sector led.

If the U.S. Government followed the advice to unilaterally delay the gTLD expansion, what do you believe the impact would be globally and do you believe this would fan the flames of anti-U.S. government sentiment with respect to Internet governance? Could it give more momentum to other governments' calls to have the United Nations assert oversight over ICANN or replace it altogether?

Answer. NTIA recognizes that the new gTLD program is the product of a six-year, international multistakeholder process and has no intention of interfering with the decisions and compromises reached during that process. Doing so would provide ammunition to those governments seeking to exert top-down, government-led control over the Internet, which NTIA believes is inimical to the future growth of the Internet.

Question 2. If the U.N. did take control or governments had greater involvement, what impact would that have on American businesses and citizens that utilize the Internet? What impact could it have on Freedom of Speech?

Answer. It is NTIA's view that the Internet we enjoy today--a major

engine of economic growth and innovation--did not develop by happenstance. It emerged as the result of the hard work of multistakeholder organizations such as the Internet Society, the Internet Engineering Task Force, and the World Wide Web Consortium. The United States is opposed to establishing a governance structure for the Internet that would be managed and controlled by nation-states. Such a structure could lead to the imposition of heavy-handed and economically misguided regulation and the loss of flexibility the current system allows today, all of which would jeopardize the growth, innovation and freedom of expression on the Internet we have enjoyed these past years.

Growth of the Internet and Expansion of the Domain Name System

Question 3. The Internet has been so amazingly beneficial to small businesses because it allows them to globally expand their local markets and enables them to compete with Fortune 100 companies because the size of the computer screen is the same for a small business in Bangor as it is for a multi-national corporation like Wall-mart. Small businesses are the anchor to not only Maine's economy but to our Nation's and the Internet has been invaluable to them.

Supporters of the expansion have stated it will bring new competition and choice to the Internet space and allow the Internet to continue to grow in the number of websites, content, applications, and online services. It also presents businesses new models to harness the boundless benefits of the Internet.

There have already been expansions to top level domains in the past to accommodate for the growth of the Internet, with the intro of gTLDs like .biz, .info, .museum, .mobi, etc.

If the Internet is going to continue to grow, shouldn't the domain name system?

Answer. The goal to establish new gTLDs beyond the original seven (.com, .edu, .gov, .int, .mil, .net, and .org) began over a decade ago when ICANN was charged in 1998 by the Department of Commerce with promoting competition in the registration of domain names. The current round of expansion of the gTLD space is a continuation of that effort.

White Paper

Question 4. In the "White Paper," which was released in 1998 and led to the formation of ICANN is competition, has as one of its core principles is competition--that competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.

Comments in the White Paper^{\3\} on the issue of new generic top level domains showed "very strong support for limiting government involvement during the transition period on the matter of adding new gTLDs. Specifically, most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." Also, commenters noted that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution."

^{\3\} <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>.

Isn't the expansion of gTLD a form of competition, where .hotels or .cars could compete against .com or .biz? If not, why?

Answer. As NTIA noted in our testimony, the development and deployment of the new gTLD program is consistent with ICANN's agreement to promote competition in the gTLD environment as outlined in the Affirmation of Commitments. In addition, the current round of expansion of the gTLD space is expected to provide a platform for city, geographic, and internationalized domain names, among other things. We expect this type of change to the DNS to enhance consumer trust and choice, and reinforce the global nature of the Internet. It is also expected that a portion of applications will be either generic words or brand-focused as part of business development, investment, and startup plans.

Some companies, however, have expressed concern that ICANN's process for expanding gTLDs may lead to the filing of defensive registrations. On December 21, 2011, Administrator Strickling and other Department of Commerce leadership met with various stakeholders to hear these concerns and, on January 3, 2012, Administrator Strickling sent a letter to ICANN's Chairman of the Board, Stephen Crocker, raising this and other issues. NTIA will continue to monitor stakeholder concerns and raise issues as appropriate. A copy of his letter is attached.

Question 5. Several commenters also stated "the market will decide which TLDs succeed and which do not." What is wrong with allowing the market to continue to decide with new gTLDs from the expansion?

Answer. NTIA agrees that the market will be a key determinant in

the success of new gTLDs and continues to be an active participant in the multistakeholder process related to the gTLD program.

Question 6. If commenters are correct that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution" then why should we place "artificial or arbitrary" limits on the Internet?

Answer. In NTIA's recent discussions with stakeholders, it has become clear that many organizations, particularly trademark owners, believe they need to file defensive applications at the top level. It appears that this possibility might not have been fully appreciated during the multistakeholder process on the belief that the cost and difficulty of operating a top-level registry would constrain companies from filing defensive registrations. NTIA believes that it would not be healthy for the expansion program if a large number of companies file defensive top-level applications when they have no interest in operating a registry. Accordingly, NTIA suggested in a January 3, 2012, letter to ICANN that it consider taking measures to mitigate against this possibility.

In addition, NTIA's letter cited an immediate need to improve communication with stakeholders and potential new gTLD applicants prior to the launch of the program. NTIA also advocated that following the application period, ICANN use the data that will then be available to examine the potential scope of the program and consider if there is a need for a phased implementation of new gTLDs. Using that data, ICANN can also explore the possibility of implementing additional protections by new TLD operators at the second-level. In addition to addressing these program-specific concerns, NTIA also reiterated the importance of implementing a stronger registrar accreditation agreement; improving current WHOIS policy; and dedicating resources to fully staff and equip the contract compliance department, including creating a centralized and automated complaint process. A copy of the January 3, 2012, letter to ICANN is enclosed.

ICANN has now taken steps to enhance its outreach in the United States, including holding an information session on January 11, 2012, in Washington, D.C. In addition, NTIA was encouraged by ICANN's January 11, 2012, written response in which ICANN commits to review possible improvements to the program, specifically to deal with the perceived need for defensive registrations at the top-level, as well as to complete a series of work streams that will facilitate more effective tools for law enforcement and consumer protection. As is necessary in a multistakeholder process, all of these efforts will require active engagement by all parties prior to adoption.

Expansion of Internet Addresses

Question 7. The Internet has revolutionized some many different areas of society and the economy. The innovation, adoption, and sheer size of the Internet are simply unparalleled. The Internet currently comprises of approximately 2 billion users and more than five billion devices. Cisco estimates there will be more than 50 billion Internet connected devices by 2020.

However, we have for the most part exhausted the existing pool of Internet address--IPv4 provides for approximately 4.3 billion addresses. The shortage has been the driving factor in creating and adopting several new technologies as well as new and larger addressing system, known as IP version 6. This migration from a 32-bit addressing space to a 128-bit addressing, will provide 340 trillion, trillion, trillion separate addresses--enough for every human bring to use many trillions of address. With IPv6, there will be approximately 670,000 IP addresses for every squared nanometer of the earth's service. To put that into perspective, a human hair is 100,000 nanometers wide.

However, the implementation of IPv6 has been somewhat slow. Last year, I read only about 20 percent of the Internet was IPv6 compatible and while a recent survey shows adoption of IPv6 grew by 1,900 percent over the past 12 months that results in only about 25 percent of .com, .net, and .org Internet subdomains.

What is the status of the migration to IPv6 and what will it mean for Internet users and businesses, domestic and globally?

Answer. Stakeholders are in varying stages of IPv6 deployment depending on individual budgets, technological coordination, and management. The Office of Management and Budget (OMB) has established IPv6 transition deadlines for U.S. agencies, and the National Institute for Standards and Technology (NIST) has begun tracking Federal agency deployment. A set of industry-wide metrics related to IPv6 deployment is lacking, however. This is one of the topics NTIA plans to address in a multistakeholder workshop planned for the first quarter of 2012. For Internet users, IPv6 will enable innovative new technologies and allow the Internet to continue to grow and expand. IPv6 is increasingly being integrated into equipment and services. There are some computer operating systems that already include IPv6 and use IPv6 automatically

if it is available. Applications will follow as demand increases. For domestic businesses, operational costs (e.g., staff training, administrative costs) may constitute additional costs outside of normal equipment refresh cycles.

Question 8. Is there anything governments can do to encourage faster adoption of IPv6 as well as increase awareness to businesses and citizens about the migration?

Answer. Government can continue to increase awareness about the need to adopt IPv6 by convening public workshops and conducting outreach. Government as a user can ensure that IPv6 is integrated and deployed in its own networks through better coordination of its acquisition and procurement activities across management, legal, policy, and technical teams.

Response to Written Questions Submitted by Hon. Barbara Boxer to Kurt Pritz

Question 1. Intellectual property rights holders have expressed some concerns about the possibility of ICANN granting generic top-level domain names (gTLDs) that could lead to consumer confusion, or violations of trademark or other intellectual property rights. Could you describe, in detail, the pre-grant procedures by which ICANN will act to prevent gTLDs that could cause consumer confusion and/or violation of intellectual property rights?

Answer. The New gTLD Program contains a suite of new, mandatory intellectual property rights protection mechanisms, both at the first level (for the top-level domains, or names to the right of the dot such as .org) and at the second level (second-level domains, like icann.org). The first level protections mitigate against applications for and the approval of new TLDs that may infringe on the legal rights of others or cause consumer confusion.

First, there is a high bar to participation in the Program. The \$185,000 evaluation fee itself is a bar to potential wrongdoing at the top-level.¹ In today's environment, second-level domain names are available for \$10. Wrongdoers easily leave them behind when the site is exposed. The higher evaluation fee for top-level names in itself will discourage abuse.

¹ The fee was calculated based on a cost recovery model but the amount has the side benefit of deterring frivolous or malicious applications.

Second, the stringent reviews include measures specifically targeted to identify--and reject--applicants that are bad actors or have already demonstrated a history of cybersquatting. ICANN requires background reviews of TLD applicants, including reviews for criminal history (including the use of telecommunications or the Internet to facilitate crimes, illegal sale of drugs, and others). In addition, ICANN will reject applications where the applicant has a pattern of adverse decisions under the UDRP (Uniform Domain Name Dispute Resolution Policy), or has been found to act in bad faith or with reckless disregard to their obligations under cybersquatting legislation.

Third, the Program offers public review of the applied-for strings and the opportunity to state an objection to any string. After the April 12, 2012 close of the application window, ICANN will publish a list of all applied-for gTLDs. (That publication will occur around May 1, 2012.) At that time, entities, individuals and governments can review the list of strings and consider if they wish to object to any individual application. In addition, the New gTLD Program allows ICANN's Governmental Advisory Committee, comprised of representatives of over 120 governments, to inform ICANN that there are concerns with an application--concerns that may include issues of consumer confusion or harm. If the Governmental Advisory Committee provides consensus advice to the Board not to approve an application, that advice creates a presumption in favor of denying the application.

There are four formal objection processes that can be initiated by the public, each administered by a well-known international dispute resolution service provider. Types of objections that can be lodged are:

String Confusion Objection--The applied-for gTLD string is confusingly similar to an existing TLD or to another applied for gTLD string in the same round of applications.

Legal Rights Objection--The applied-for gTLD string infringes the existing legal rights of the objector.

Limited Public Interest Objection--The applied-for gTLD string is contrary to generally accepted legal norms of morality and public order that are recognized under principles of international law.

Community Objection--There is substantial opposition to the gTLD application from a significant portion of the community to which the gTLD string may be explicitly or implicitly targeted.

To avoid frivolous objections, parties must have standing to object. For example, legal rights objectors must be the right holder or intergovernmental organization whose rights are being infringed.

Objections lead to independent dispute resolution proceedings. Parties are the objector and the gTLD applicant.

The International Centre for Dispute Resolution has agreed to administer disputes brought pursuant to string confusion objections.

The Arbitration and Mediation Center of the World Intellectual Property Organization has agreed to administer disputes brought pursuant to legal rights objections.

The International Center of Expertise of the International Chamber of Commerce has agreed to administer disputes brought pursuant to Limited Public Interest and Community Objections.

Standards of review for each of the objections have been carefully crafted through reviews by intellectual property holders and the Internet community. For example, in the case of rights infringement objections, "Strings" must not infringe the existing legal rights of others that are recognized or enforceable under generally accepted and internationally recognized principles of law. A Dispute Resolution Service Provider panel of experts presiding over a legal rights objection will determine whether the potential use of the applied-for gTLD by the applicant takes unfair advantage of the distinctive character or the reputation of the objector's registered or unregistered trademark or service mark ("mark") or IGO name or acronym (as identified in the treaty establishing the organization), or unjustifiably impairs the distinctive character or the reputation of the objector's mark or IGO name or acronym, or otherwise creates an impermissible likelihood of confusion between the applied-for gTLD and the objector's mark or IGO name or acronym.

In the case where the objection is based on trademark rights, the panel will consider the following non-exclusive factors:

1. Whether the applied-for gTLD is identical or similar, including in appearance, phonetic sound, or meaning, to the objector's existing mark.
2. Whether the objector's acquisition and use of rights in the mark has been bona fide.
3. Whether and to what extent there is recognition in the relevant sector of the public of the sign corresponding to the gTLD, as the mark of the objector, of the applicant or of a third party.
4. Applicant's intent in applying for the gTLD, including whether the applicant, at the time of application for the gTLD, had knowledge of the objector's mark, or could not have reasonably been unaware of that mark, and including whether the applicant has engaged in a pattern of conduct whereby it applied for or operates TLDs or registrations in TLDs which are identical or confusingly similar to the marks of others.
5. Whether and to what extent the applicant has used, or has made demonstrable preparations to use, the sign corresponding to the gTLD in connection with a bona fide offering of goods or services or a bona fide provision of information in a way that does not interfere with the legitimate exercise by the objector of its mark rights.
6. Whether the applicant has marks or other intellectual property rights in the sign corresponding to the gTLD, and, if so, whether any acquisition of such a right in the sign, and use of the sign, has been bona fide, and whether the purported or likely use of the gTLD by the applicant is consistent with such acquisition or use.

7. Whether and to what extent the applicant has been commonly known by the sign corresponding to the gTLD, and if so, whether any purported or likely use of the gTLD by the applicant is consistent therewith and bona fide.

8. Whether the applicant's intended use of the gTLD would create a likelihood of confusion with the objector's mark as to the source, sponsorship, affiliation, or endorsement of the gTLD.

For a complete description of the standards and rules for the objection and dispute resolution processes, see Module 3 of the Applicant Guidebook, <http://newgtlds.icann.org/en/applicants/agg/objection-procedures-11jan12-en.pdf>.

In addition, there will be a specialized function, an "Independent Objector" that will act solely in the best interest of the public, and may file an objection to an application that may give rise to the concerns raised above.

As noted at the Subcommittee hearing, some trademark holders continue to voice concern that the New gTLD Program does not offer sufficient protections to reduce the need to submit defensive applications for top-level domains. Detailed discussions with intellectual property experts that participate actively in ICANN policy development indicate that those experts who are knowledgeable of the TLD marketplace are most comfortable with protections for top-level names. In regards to the perceived need for defensive registrations at the top-level by trademark holders, ICANN has already committed to solicit information as expeditiously as possible from the intellectual property community. This commitment, set out in a January 11, 2012 letter to Assistant Secretary for Communications and Information, Lawrence Strickling, also committed ICANN to submit any new proposals or recommendations arising out of that work for evaluation and comment from the ICANN stakeholder community.

Question 2. It is my understanding that in previous expansions of domain names, ICANN has allowed a "sunrise" period, prior to considering applications, in order to allow rights holders to submit information regarding their protected names and uses. The "sunrise" submissions by rights holders could act as a resource for ICANN to help prevent consumer confusion and/or intellectual property rights violations. Does ICANN plan to allow "sunrise" submissions by rights holders, and if not, why?

Answer. Yes, a "sunrise" period is mandated for each new TLD approved under the New gTLD Program.

ICANN is in the process of selecting providers for a Trademark Clearinghouse, a central repository for information to be authenticated, stored, and disseminated pertaining to the rights of trademark holders. Trademark holders will have the opportunity to record (i) Nationally or multi-nationally registered word marks from all jurisdictions; (ii) Any word mark that has been validated through a court of law or other judicial proceeding; (iii) Any word mark protected by a statute or treaty in effect at the time the mark is submitted to the Clearinghouse for inclusion; and (iv) other marks that constitute intellectual property, all subject to the specific criteria of the Clearinghouse.

The authenticated rights data in the Trademark Clearinghouse will be used to support pre-launch Sunrise and Trademark Claims services. All new gTLD registries will be required to use the Trademark Clearinghouse to support the required pre-launch and initial launch period rights protection mechanisms that must include, at minimum, a Trademark Claims service and a Sunrise process.

The Trademark Clearinghouse is expected to create efficiencies and for trademark holders. Instead of requiring trademark holders to authenticate mark information for each separate new registry, the authentication and validation processes can be completed once through submission to the Trademark Clearinghouse.

Through the Sunrise process, trademark holders will have the opportunity to register desired second-level domain names before a new gTLD opens for general registration. Rights holders who have recorded their data in the Trademark Clearinghouse will receive notice if a third party registers a domain name matching the Clearinghouse record during the sunrise period.

After the gTLD is accepting general registrations, ICANN requires that each new TLD offer a Trademark Claims service to provide real-time notices to prospective registrants where a domain name matches a Clearinghouse record, and provide notice to trademark holders in cases where domain names matching a Clearinghouse record are registered. Information on the additional intellectual property protections required under the New gTLD Program is detailed in my written

testimony.\2\

\2\ A summary of the trademark protections is available at <http://www.icann.org/en/topics/new-gtlds/rights-holders-with-insert-02sep11-en.pdf> and <http://www.icann.org/en/topics/new-gtlds/trademark-factsheet-insert-02sep11-en.pdf>.

Response to Written Questions Submitted by Hon. Maria Cantwell to
Kurt Pritz

DNS Security

Question 1. Mr. Pritz, my understanding is that all of the new domains that will be selected by ICANN must agree to use the Domain Name System Security Extensions, known as DNS SEC. DNS SEC uses public key cryptographic digital signatures to authenticate the origin of the DNS data and assure the integrity of the DNS data.

Currently, are DNS servers and DNS server software targeted for attack by hackers?

Why is DNS SEC important to any broader global cyber-security effort?

Does DNS SEC allow for any re-direction in its current implementation? Could it be made to? What would be some of the potential security vulnerabilities if DNS SEC were to allow any redirection?

What is the status of DNS SEC implementation with respect to existing domains? Is it realistic to expect that the new domains will be compliant right from the start?

Answer. Today, DNS servers and server software are targeted for attack by hackers. There are recent examples of incidents in which hackers were able to impersonate DNS server responses, or feed false data to the servers, ultimately redirecting end users to rogue sites to install malware. For example, the "DNS Charger" case--recently the subject of an indictment in the Southern District of New York, infected over 4 million computers worldwide through this type of attack.

Coordinated deployment of DNSSEC is important in many respects. First, it will protect against attacks on DNS servers and software. Possibly even more important, however, the borderless nature of DNSSEC deployment has--for the first time--created a global, cross-organizational, trans-national platform for authentication, cyber security innovation and international cooperation. This will make DNSSEC a critical tool in combating the global nature of cyber crime.

DNSSEC does not allow for re-direction in its current implementation. Re-direction requires a change to the original record by a third party. With DNSSEC, any changes to the original record from the domain name owner's servers will be detected and flagged as an error or dropped. The validation occurs on the end user's machine to provide true end-to-end security.

Any change to DNSSEC to allow for re-direction would defeat its purpose. The purpose of DNSSEC is to use digital signatures to ensure records do not get changed "in flight." An alternative could be to put full trust in your Internet service provider (ISP) to perform the validation and enter manual re-direction entries, however this appears to be an inadequate level of security. For example, in late 2011, an attack on servers at multiple Brazilian ISPs caused redirection to malware-infected sites before connecting the ISP's customers to popular Internet sites. \3\ This affected millions of users, and demonstrates that leaving validation to the ISP level is insufficient to protect against attacks.

\3\ See e.g., "Hackers poison Brazilian ISP DNS to infect users with banking Trojan," TECHWORLD, Nov. 9, 2011 at <http://news.techworld.com/security/3317148/hackers-poison-brazilian-isp-dns-to-infect-users-with-banking-trojan/>.

If DNSSEC were to allow re-direction or filtering, that would make the system again vulnerable to insider attacks. In addition, re-direction could lead to poor performance due to the processing of large re-direction lookup tables for the billions of DNS queries that happen each day, as well as undesired responses. Re-direction could result--with one click--permanently leading the end user to use alternate, unfiltered and insecure non-DNSSEC validating servers.

DNSSEC adoption is growing. Today, 82 top-level domain name registries (covering 82 percent of existing domain names), including

.COM and .ORG, have DNSSEC deployed. The new gTLD Program requires that all new registries deploy DNSSEC. In the United States, Comcast has begun rolling out DNSSEC to all 17.8 million of its Internet customers [4], and internationally, we've seen adoption by network carriers such as Vodafone and Telefonica. It is realistic that new TLDs will be compliant from their introduction, as required in the Program. It is not a difficult requirement to meet, and current products, including hardware have DNSSEC support built in. ICANN and other organizations are regularly running training and awareness sessions to increase DNSSEC adoption.

[4] See, "Comcast Completes DNSSEC Deployment," by Jason Livingood, Vice President, Internet Systems, January 10, 2012 at <http://blog.comcast.com/2012/01/comcast-completes-dns-sec-deployment.html>.

Cracking Down on Rogue Websites

Question 2. Mr. Pritz, do you believe that the increase in top level domains combined with all the requirements ICANN is putting in place will make it easier, more difficult, or not change the ability of U.S. authorities to crack down on Internet sites--to use the phrase--that are dedicated to infringing activity?

Answer . The New gTLD Program includes protections (not required in today's TLD), designed to prevent malfeasance and to make it easier to crack down on malicious conduct where it occurs. Some of the tools directly relating to increased law enforcement access to information and ability to combat malicious conduct in new TLDs include:

- A requirement to maintain enhanced, or "thick", WHOIS records at the registry level to allow more rapid search capabilities, facilitating efficient resolution of malicious conduct activities;
 - A centralized zone file access system to allow for more accurate and rapid identification of key points of contact within each gTLD. This reduces the time necessary to take corrective action within TLDs experiencing malicious activity; and
 - A requirement to establish a single point of contact responsible for the handling of abuse complaints (as requested by law enforcement authorities).
- Background reviews of TLD applicants, including reviews for criminal history (including the use of telecommunications or the Internet to facilitate crimes, illegal sale of drugs, and others);
- Rejection of applications where the applicant has a pattern of adverse decisions under the UDRP (Uniform Domain Name Dispute Resolution Policy), or has been found to act in bad faith or with reckless disregard to their obligations under cybersquatting legislation;
- The requirement to have a plan to implement domain name system security extensions (DNSSEC), reducing the risk of "man-in-the-middle" attacks and spoofed DNS records; and

Requirements that New gTLD Registry Operators must:

- Maintain a Continued Operations Instrument sufficient to fund basic registry operations for a period of three years in case of business failure, to protect consumers and registrants within that gTLD in the event of registry failure.
- Maintain continuity and transition plans, including regular failover testing.
- Cooperate with ICANN In the event transition to a new registry operator is necessary. ICANN will identify an Emergency Back-End Registry Operator to assist in the registry transition process and provide emergency registry services as needed.

In addition, ICANN is actively working to address 12 recommendations made by law enforcement regarding strengthening ICANN's contracts with its accredited registrars. Specifically, as directed by the Board, ICANN is currently in negotiations with its accredited

registrars to amend the Registrar Accreditation Agreement (RAA) to meet the recommendations raised by law enforcement authorities. Amendments are expected to be in force prior to the entry of the first new gTLD in 2013.

These negotiations include face-to-face meetings with law enforcement agencies to ensure understanding of law enforcement requirements. The negotiation anticipates substantial and unprecedented steps to improve the accuracy of Whois data. ICANN is taking a strong stand in regard to issues relating to the verification of Whois data and expects the accredited registrars to take action to address the demands of governments and law enforcement worldwide. Updates on the negotiations are available at <https://community.icann.org/display/RAA/Negotiations+Between+ICANN+and+Registrars+to+Amend+the+Registrar+Accreditation+Agreement>.

Question 3.

Mr. Pritz, how many new gTLD and other domains does ICANN estimate will be created?

What is the process by which ICANN will award the new gTLD and other domains? Will it be just a matter of who can bid the most?

How much money is expected to be raised from the new gTLDs and other domains?

What does ICANN intend to do with the funds? What are the mechanisms in place to assure accountability?

Answer. The number of new gTLDs that will be created through this first application round is still a matter of speculation. Early estimates coming from the community postulated that there would be 500 or more applications. Recently, some have estimated that 1000 or more applications will be made in the current round, opened on January 12, 2012. Once the application window closes on April 12, 2012, the speculation will come to an end and the full number of applications will be known. Not surprisingly, many companies are remaining quiet about their business strategies regarding plans to establish new gTLDs, making true estimates difficult.

If significantly more than 500 applications are received, the applications will be processed in batches of 500. In addition, on the advice of root server stability experts, ICANN has committed to limit the number of new TLD entered into the root in any one year to 1,000.

The extensive application and evaluation process is set out in the Applicant Guidebook, with over 300 pages of detail. Applicants must meet all of the application criteria, pass the rigorous evaluations, as well as pass through any of the four objection processes that may be used against the application. The key to the application process, however, is that it does not create a beauty contest among applicants or impose arbitrary limitations such as type of application that existed in two prior pilot rounds on new gTLDs. These pilot rounds are described in detail in response to Senator McCaskill's question 2.

All applicants are expected to pay the \$185,000 evaluation fee to ICANN, unless the applicants qualify for financial support. If an applicant qualifies for the available financial support, it will only pay \$47,000 towards the application fee. The \$185,000 application fee is calculated on a cost-recovery model, and was determined through a comprehensive and complex process that included identifying over 100 separate tasks required for the evaluation of a new gTLD application and seeking guidance from experts. The fee includes development costs (\$26,950 per application); application processing and evaluation costs (\$97,800 per application); and costs for risk mitigation steps, including allowance for unanticipated costs and variations between estimates and actual costs incurred (\$60,000 per application). A 14-page document setting out the methodology and further breakdown of the fee component is available at <http://www.icann.org/en/topics/new-gtlds/cost-considerations-04oct09-en.pdf>.

This document is an update to the earlier "Cost Considerations of the New gTLD Program", published in October 2008, available at <http://www.icann.org/en/topics/new-gtlds/cost-considerations-23oct08-en.pdf>.

While there is a possibility that multiple applicants for the same TLD could proceed to an auction to operate the TLD, ICANN intends the auction process as a last-resort method. ICANN encourages applicants to work together to arrive at a mutually-agreeable solution instead of allowing the competing applications to proceed to an auction. To the extent that a TLD proceeds to auction and generates additional funds, I discuss below ICANN's commitments to using these funds towards its not-for-profit mission.

As a Not-for-Profit Public Benefit Corporation, ICANN is committed to its not-for-profit mission. For ICANN, that commitment requires us to assure that excess funds generated through the New gTLD Program (i.e., those that exceed the costs incurred for the processing, evaluation and other components of the New gTLD Program) are used in furtherance of ICANN's mission. The evaluation fee has been calculated to recover costs and not exceed those costs. If evaluation fees exceed actual costs, future evaluation fees will be reduced. If costs exceed fees, then ICANN will absorb that and future fees will be increased to meet the actual costs. For additional funds accruing to ICANN other than evaluation fees, such as the auction proceeds mentioned, the Applicant Guidebook addresses the issue in this way:\5\

\5\ See Module 4, Page 19 of the Applicant Guidebook, version 2010-01-11.

It is planned that costs of the new gTLD program will offset by fees, so any funds coming from a last resort contention resolution mechanism such as auctions would result (after paying for the auction process) in additional funding. Any proceeds from auctions will be reserved and earmarked until the uses of funds are determined. Funds must be used in a manner that supports directly ICANN's Mission and Core Values and also

allows ICANN to maintain its not for profit status.

Possible uses of auction funds include formation of a foundation with a clear mission and a transparent way to allocate funds to projects that are of interest to the greater Internet community, such as grants to support new gTLD applications or registry operators from communities in subsequent gTLD rounds, the creation of an ICANN-administered/ community-based fund for specific projects for the benefit of the Internet community, the creation of a registry continuity fund for the protection of registrants (ensuring that funds would be in place to support the operation of a gTLD registry until a successor could be found), or establishment of a security fund to expand use of secure protocols, conduct research, and support standards development organizations in accordance with ICANN's security and stability mission.

ICANN handles its budgeting processes in an open and transparent manner. Not only will the community discussion regarding the use of excess funds be the subject of community consultation, but the funds will also be tracked and accounted for within ICANN's publicly-posted financial documents.

Response to Written Questions Submitted by Hon. Claire McCaskill to Kurt Pritz

Question 1. I recognize that ICANN has put a tremendous amount of work and study into the planned expansion of top-level domain names. There have been a number of economic studies, dozens of comment periods and seven versions of the Applicant Guidebook before the final one was issued. ICANN clearly views the expansion of gTLDs as vital to the growth and viability of the Internet.

Given how much time, effort and study has been put into this decision, I find it disturbing that there is still so much dispute about expansion. There is clearly a lack of consensus about these changes in the business and non-profit industries as well as concerns from law enforcement. This is not a decision to be taken lightly and I believe there needs to be better agreement on the outstanding issues from all interested parties.

Both of you have very differing opinions about the implications of the gTLD expansion. Why has it taken this long to get this out in the open?

Mr. Jaffe, there was an extensive comment period before the guidelines were issued, which I'm sure you were aware of--did you and other industries fully participate in the process? Do you disagree with the economic studies that ICANN has cited saying this would increase competition and innovation? If so, why?

Mr. Pritz, how much weight was given to the concerns raised by Mr. Jaffe and others with his viewpoints? The danger of increased copyright infringement appears to be a legitimate issue--do you agree?

Answer. Formation of rights protection mechanisms for the new gTLDs has been an important, legitimate concern throughout the development of the New gTLD Program.

The years of policy and implementation design work that have gone into the New gTLD Program have formed a program that will result in

TLDs that are required to offer more protections than TLDs that have already been introduced into the Domain Name System. The program was designed over more than six years, with input from no less than ten independent expert and community working groups addressing the issues that ANA continues to raise outside of the multi-stakeholder process. There are significant trademark protections designed by intellectual property experts. There are substantial protections against registry failure, including requirements for registry transition planning and designation of emergency registry operators, so that even in the event of registry failure, consumers will have a period of three to five years until basic registry operations are concluded.

One of the hallmarks of ICANN is its ability to call together world-class experts to consider issues facing the ongoing stability and security of the Internet. For the new gTLD program, ICANN formed teams of: intellectual property experts to develop trademark protection mechanisms; Internet security experts to develop consumer protections; registry operators to create mechanisms to access registry data; financial services providers to develop thresholds for "secure" TLDs; and linguists to avoid user confusion.

In addition to those ten independent expert working groups formed, ICANN published, 59 explanatory memoranda and independent reports, thousands of comments in no fewer than 47 extended public comment periods, and 1,400 pages of comment summary and analysis as part of the community formation of the New gTLD Program. All comments were listened to and taken into account across the eight versions of the Applicant Guidebook. All of the rights protection mechanisms were borne of these community consultations.

The Association of National Advertisers is just one of the hundreds of voices that participated in the formation of the New gTLD Program. The ANA provided feedback using ICANN's public comment process, and its suggestions have been carefully considered as described below. Referring to the comment submitted by the ANA on 15 December 2008, that letter stated:

"Although ANA would have preferred ICANN to have decided against introducing the gTLD proposal, we urge, at a minimum, that ICANN move cautiously and consider points carefully before embarking on this potentially seismic shift in domain availability."

The letter suggested five specific proposals that ICANN should, at a minimum, consider:

1. Protections for Trademarks. ICANN should explore additional application restrictions, processes and technologies to insulate brand owners from the costs and burdens of chasing and prosecuting squatters and others for violation of their trademark rights.

In response to this and similar comments, ICANN convened the Implementation Response Team (comprised of 18 intellectual property experts) to recommend additional trademark protections, as discussed within my testimony. The majority of those recommendations have been incorporated, many in a stronger form than was originally proposed by the IRT.

2. Transparency of Applications and Registration Information. Some comments suggest transparency in the application process (e.g., elimination of proxy registrations, heightened emphasis on the provision of complete "whois" information, and posting all gTLD applications) will lead to less abuse. ICANN should examine these proposals as well.

In response to this and other comments: (1) more application information will be made public in the process of publishing information about the applied-for strings (personally identifiable information and sensitive security or proprietary information are not published), (2) background checks on applicants have been deepened, and (3) all new gTLD registries are required to maintain a "complete" or "thick" Whois model. As discussed in response to Senator Cantwell's Question 1, work to require verification of Whois information is underway through ICANN's negotiations with its registrars on the Registrar Accreditation Agreement. Those verification requirements are expected to be in place prior to the entry of the first new gTLD.

3. Fees. ICANN should study the various issues raised concerning fees, including those questions relating to how the new proposed fee structure might impact fee structures with existing gTLDs.

In response to this and other comments, fee structures have been extensively studied. The process used for estimating fees has been available since October 2008 and was iterated in response to public comment, and an economic study was undertaken on registry competition and price caps, which supported that price caps should not be introduced within new TLDs absence a showing of market power. A detailed discussion regarding the fee structure is provided in response to Senator Cantwell's Question 2.

4. General Process Issues. ANA notes several application and adjudication process issues that should be analyzed, including ICANN's right to "overrule" the determination of a Dispute Resolution Provider, the apparent absence of judicial remedy and how allowing public comments on the application process impacts it as a whole and, particularly, the objection process.

In response to this and other comments, elaborations were made to the objection processes, and the roles of the Board, governments, and public comment have been clarified. As discussed in my response to Senator Boxer's Question 1, the objection processes are robust and well-defined.

5. "Generic" gTLDs (e.g., .bank, .insurance, .securities, .medicine, etc.) have a unique social and commercial value as they are broadly descriptive of industries and other unifying activities. Under the terms of the Draft RFP, anyone can apply for these "generic" gTLDs, including a single member of the applicable industry. ANA suggests that ICANN thoroughly review the uses and standing requirements for these gTLDs.

In response to this and other comments, and in particular working with BITS (the policy division of The Financial Services Roundtable) and the financial services industry, a requirement was added that security capabilities should be commensurate with the nature of the string, i.e., applications for strings with unique trust implications are expected to provide a commensurate level of security. Applicants are also given incentive to incorporate security levels that exceed the baseline requirements. The gTLD criteria also references work independently published by the American Bankers Association and The Financial Services Roundtable as an illustrative example of how the criteria for a high-security TLD could be satisfied. In the event that a string is applied for and does not include appropriate security measures, that could serve as the basis for objection or an issuance of a GAC Early Warning regarding the string (a process where governments, through the Governmental Advisory Committee, provides notice regarding potential sensitivities with an application).

As seen from ICANN's responses, all of the ANA's comments were considered, responded to, and, as is clear from the above, largely accepted. This is indicative of the process that was followed with all stakeholder comment on the New gTLD Program to arrive at a balanced outcome.

The broad consensus work that went into the development of this program does not mean that everyone is satisfied with the result. There are some who wish for more restrictions; some for less. Lawrence Strickling, Assistant Secretary of Commerce for Communications and Information of the National Telecommunications and Information Agency, U.S. Department of Commerce, recently described the process of building consensus in ICANN's multistakeholder model, as well as the importance of respecting the outcomes reached, noted that while the multistakeholder process does not guarantee that everyone will be satisfied with the outcome, it is critical to respect the process and accept the outcome reached.\6\

\6\ Remarks of Assistant Secretary Strickling at the Practising Law Institute's 29th Annual Telecommunications Policy & Regulation Conference, December 8, 2011, available at <http://www.ntia.doc.gov/speechtestimony/2011/remarks-assistant-secretary-strickling-practising-law-institutes-29th-annual-te>.

ICANN's opening of the application window for new TLDs is in fulfillment of ICANN's role of accountability to the outcomes of the multistakeholder model. ICANN remains accountable to evaluation of the expansion and implementing refinements to the New gTLD Program that may arise through the multistakeholder model.

With the opening of the application window, ICANN's work continues. ICANN has already committed to solicit information as expeditiously as possible from the intellectual property community. This commitment, set out in a January 11, 2012 letter to Assistant Secretary for

Communications and Information, Lawrence Strickling, also committed ICANN to submit any new proposals or recommendations arising out of that work for evaluation and comment from the ICANN stakeholder community.

ICANN has already committed to review the impacts of the rollout of the New gTLD Program, including a post-launch study on the effectiveness of the new trademark protections and any effects on root zone operations, and a post-delegation economic study on the results of the first set of new gTLDs. ICANN has also committed to undertake reviews in accordance with the Affirmation of Commitments between the United States Department of Commerce and ICANN, including a review ``that will examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as effectiveness of (a) the application and evaluation process, and (b) safeguards put in place to mitigate issues involved in the introduction or expansion." There will be opportunities for public input regarding all of this post-launch work.

ICANN looks forward to ICANN and Internet community members continuing their involvement within the multi-stakeholder model and bringing their proposals for discussion among all of the Internet's stakeholders.

Question 2. I know that ICANN is resistant to limiting the number of new gTLDs because it does want to pick winners and losers about which gTLDs should be added. But prior expansions have been limited. What are the concerns now of trying a pilot or more limited expansion to examine problems that may occur in the process?

Answer. ICANN has operated three pilot programs on the introduction of new TLDs into the DNS. In 2000, ICANN launched a ``Proof of Concept" round, through which seven new TLDs were selected out of 44 applicants who proposed over 200 different potential TLDs. In 2004, ICANN accepted applications for Sponsored Top-Level Domains (sTLDs), specialized TLDs that are tied to defined sponsor communities (such as .CAT for the Catalan-speaking community). Finally, ICANN launched the Internationalized Domain Name country code TLD (IDN ccTLD) Fast Track process in 2009 that, to date had resulted in the delegation of 30 IDN TLDs, enabling countries and territories that use languages based on scripts other than Latin to offer users domain names in non-Latin characters (e.g., Arabic, Chinese, Devanagari, Russian, Thai scripts).

Through these pilot rounds, important lessons were learned. First, new TLDs can safely be added to the DNS. Second, the imposition of artificial restrictions on the rounds, such as the numerical restriction imposed in 2000 and the type-restriction imposed in 2004 place ICANN in the position of picking winners and losers, as opposed to fulfilling its mission of facilitating competition in the DNS. Artificial restrictions also create incentives for applicants to work to fit their TLD ideas into categories that may not be a true fit. The outcomes of the pilot rounds also helped inform the heightened protections in place for the New gTLD Program. The pilot programs informed the creation of independent dispute resolution programs that anticipate points of contention and provide paths for addressing potential abuses, controversies and sensitivities. The Fast Track program (and the IDN test bed before that) demonstrates that IDNs can be safely delegated into the root zone. These lessons learned will enable the realization of anticipated benefit in a safer environment.

The New gTLD Program will be implemented in a measured and limited manner. Rather than limiting by number or type, the round is limited by a high bar of required competencies and protections, and a limited application period. There is a 90-day application window, followed by a stringent evaluation process through which ICANN's expert evaluation panels will evaluate registry abilities to meet the high technical and operational requirements. The rollout of new gTLDs will be distributed over time--no TLDs are expected to be operational prior to early 2013; delegations of additional TLDs will be distributed after that, as the applications pass through the evaluation and dispute resolution processes. The imposition of otherwise artificial limitations on today's New gTLD Program would only create incentives for the bad-acting applicants to seek advantages in a subjective evaluation process. The Program in place today allows applicants to be evaluated against objective standards.

As part of the consensus-building process, ICANN has agreed with governments and trademark holders that the next round of new TLD applications should occur after studying the impact of this round `s delegations on root zone stability and conducting a study on whether new trademark protections should be adjusted. ICANN will undertake these studies as soon as is practicable, in consultation with stakeholders. ICANN will also provide public updates on the ongoing process to determine the timing of the next round.

ICANN is also mindful of its commitments set forth in the

Affirmation of Commitments to, ``organize a review that will examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as effectiveness of (a) the application and evaluation process, and (b) safeguards put in place to mitigate issues involved in the introduction or expansion." \7\

\7\ See <http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm>.

Question 3. I recognize that ICANN believes all of the issues have been fully vetted and that everyone has had ample time to state their views. But given the major disagreements that are still occurring, what is the harm in delaying implementation to further work through these issues in the hope of coming to a better consensus? In your view, what would happen if ICANN does not start the expansion process in January?

Answer. On January 12, 2012, ICANN opened the first application window for new gTLDs. As discussed within my written testimony, the opening of the application window is only the first step to rolling out new gTLDs, with the first new gTLD expected to be operational until 2013.

ICANN's opening of the application window in accordance with the time-frame committed to in June 2011 was an important step in remaining accountable to the Internet community. As noted above, work is still ongoing--the Program will be subject to continued reviews and refinements. However, with the years' worth of work already completed, the ten independent expert working groups, 59 explanatory memoranda and independent reports, thousands of comments in no fewer than 47 extended public comment periods, and 1,400 pages of comment summary and analysis, it was time for the Program to move into implementation so that the Internet community can start analyzing its effects using true data and experience.

Delaying the process serves those seeking to upset the multi-stakeholder model, designed by the U.S. Government to ensure an open Internet. Assistant Secretary Lawrence Strickling, recently stated:

The multistakeholder process does not guarantee that everyone will be satisfied with the outcome. But it is critical to preserving the model of Internet governance that has been so successful to date that all parties respect and work through the process and accept the outcome once a decision is reached. When parties ask us to overturn the outcomes of these processes, no matter how well-intentioned the request, they are providing ``ammunition" to other countries who attempt to justify their unilateral actions to deny their citizens the free flow of information on the Internet. This we will not do. There is too much at stake here. [Emphasis added.] \8\

\8\ Remarks of Assistant Secretary Strickling at the Practising Law Institute's 29th Annual Telecommunications Policy & Regulation Conference, December 8, 2011, available at <http://www.ntia.doc.gov/speechtestimony/2011/remarks-assistant-secretary-strickling-practising-law-institutes-29th-annual-te>.

Response to Written Questions Submitted by Hon. Mark Warner to Kurt Pritz

Question 1. I understand the reasoning behind the high price of a new top level domain. It is important to me that the new gTLDs are only available to legitimate and serious organizations. However, up to 1,000 new TLD names at \$185,000 a piece is a considerable increase in income for ICANN. How will this money be used to regulate the expansive space new gTLDs will create? What are your plans for excess revenue? Will ICANN retain any revenue from the creation of new gTLDs? If so, how much revenue do you anticipate ICANN will receive over the next five years?

Answer. ICANN shares your concern that a high bar is created to apply for a new gTLD, to help assure that new gTLDs are available to organizations that are serious in commitment to operate a portion of the Internet infrastructure. As discussed in response to Senator Cantwell's Question 3, the New gTLD Program fee is operated on a cost-recovery basis. As provided to Senator Cantwell:

The \$185,000 application fee is calculated on a cost-recovery model, and was determined through a comprehensive and complex process that included identifying over 100 separate tasks required for the evaluation of a new gTLD application and seeking guidance from experts.

The fee includes development costs (\$26,950 per application); application processing and evaluation costs (\$97,800 per application); and costs for expected contingencies, including allowance for unanticipated costs and variations between estimates and actual costs incurred (\$60,000 per application). A 14-page document setting out the methodology and further breakdown of the fee component is available at <http://www.icann.org/en/topics/new-gtlds/cost-considerations-04oct09-en.pdf>. This document is an update to the earlier "Cost Considerations of the New gTLD Program", published in October 2008, available at <http://www.icann.org/en/topics/new-gtlds/cost-considerations-23oct08-en.pdf>.

While there is a possibility that multiple applicants for the same TLD could proceed to an auction to operate the TLD, ICANN intends the auction process as a last-resort method. ICANN encourages applicants to work together to arrive at a mutually-agreeable solution instead of allowing the competing applications to proceed to an auction. To the extent that a TLD proceeds to auction and generates additional funds, I discuss below ICANN's commitments to using these funds towards its not-for-profit mission.

As a Not-for-Profit Public Benefit Corporation, ICANN is committed to its not-for-profit mission. For ICANN, that commitment requires us to assure that excess funds generated through the New gTLD Program (i.e., those that exceed the costs incurred for the processing, evaluation and other components of the New gTLD Program) are used in furtherance of ICANN's mission. The evaluation fee has been calculated to recover costs and not exceed those costs. If evaluation fees exceed actual costs, future evaluation fees will be reduced. If costs exceed fees, then ICANN will absorb that and future fees will be increased to meet the actual costs. For additional funds accruing to ICANN other than evaluation fees, such as the auction proceeds mentioned, the Applicant Guidebook addresses the issue in this way:⁹

⁹ See Module 4, Page 19 of the Applicant Guidebook, version 2010-01-11.

It is planned that costs of the new gTLD program will offset by fees, so any funds coming from a last resort contention resolution mechanism such as auctions would result (after paying for the auction process) in additional funding. Any proceeds from auctions will be reserved and earmarked until the uses of funds are determined. Funds must be used in a manner that supports directly ICANN's Mission and Core Values and also allows ICANN to maintain its not for profit

status.

Possible uses of auction funds include formation of a foundation with a clear mission and a transparent way to allocate funds to projects that are of interest to the greater Internet community, such as grants to support new gTLD applications or registry operators from communities in subsequent gTLD rounds, the creation of an ICANN-administered/community-based fund for specific projects for the benefit of the Internet community, the creation of a registry continuity fund for the protection of registrants (ensuring that funds would be in place to support the operation of a gTLD registry until a successor could be found), or establishment of a security fund to expand use of secure protocols, conduct research, and support standards development organizations in accordance with ICANN's security and stability mission.

In addition to evaluation fees, each registry will contribute \$25,000 annually to ICANN operations, policy development and community outreach activities. (If some registries become very large, they will pay greater fees.) That fee will cover contractual compliance, registry and IANA services for that registry, as well as contribute to the general ICANN activities described here. It has been urged by the community that ICANN "staff-up" to meet compliance, IANA function and other needs to adequately serve the new environment. If these revenues exceed needs, fees will be reduced.

ICANN handles its budgeting processes in an open and transparent manner. Not only will the community discussion regarding the use of funds be the subject of community consultation, but the funds will also be tracked and accounted for within ICANN's publicly-posted financial documents.

Question 2. Federal Trade Commission Chairman Leibowitz recently stated that "a rapid, exponential expansion of generic TLDs has the potential to magnify both the abuse of the domain name system and the corresponding challenges we encounter in tracking down Internet

fraudsters." His statement echoes the concerns of many that this expansion may be necessary, but the expansion from 21 gTLDs to up to 1000 gTLDs sounds extreme.

a. Why did ICANN choose to go from twenty-one top level domains up to over 500 in the first wave, or 1000 overall, instead of a more gradual increase over a set period of years? Can you please explain why this particular expansion program is the best plan for industry and consumers?

Answer. The domain name system (DNS) today includes over 300 TLDs: 249 ccTLDs, 30 IDN ccTLDs, and 21 gTLDs. None of those 300 existing TLDs are required to include the standard protections that new TLDs must offer. The protections of the New gTLD Program were formed through ICANN's multi-stakeholder model.

ICANN has operated three pilot programs on the introduction of new TLDs into the DNS. In 2000, ICANN launched a "Proof of Concept" round, through which seven new TLDs were selected out of 44 applicants (proposing over 200 different potential TLDs). In 2004, ICANN accepted applications for Sponsored Top-Level Domains (sTLDs), specialized TLDs that are tied to defined sponsor communities (such as .CAT for the Catalan-speaking community). Finally, ICANN launched the IDN ccTLD Fast Track process in 2009 that, to date had resulted in the delegation of 30 IDN TLDs.

Through these pilot rounds, important lessons were learned. First, new TLDs can safely be added to the DNS. Second, the imposition of artificial restrictions on the rounds, such as the numerical restriction imposed in 2000 and the type-restriction imposed in 2004 place ICANN in the position of picking winners and losers, as opposed to fulfilling its mission of facilitating competition in the DNS. Artificial restrictions also create incentives for applicants to work to fit their TLD ideas into categories that may not be a true fit. The outcomes of the pilot rounds also helped inform the heightened protections in place for the New gTLD Program.

The gTLDs approved under this program will be introduced in a measured, limited manner. Rather than limiting by number or type, the round is limited by a high bar of required competencies and protections, and a limited application period. There is a 90-day application window, followed by a stringent evaluation process through which ICANN's expert evaluation panels will evaluate registry abilities to meet the high technical and operational requirements. The rollout of new gTLDs will be distributed over time--no TLDs are expected to be operational prior to early 2013; delegations of additional TLDs will be distributed after that, as the applications pass through the evaluation and dispute resolution processes. The imposition of otherwise artificial limitations on today's New gTLD Program would only create incentives for the bad-acting applicants to seek advantages in a subjective evaluation process. The Program in place today allows applicants to be evaluated against objective standards.

As part of the consensus-building process, ICANN has agreed with governments and trademark holders that the next round of new TLD applications should occur after studying the impact of this round's delegations on root zone stability and conducting a study on whether new trademark protections should be adjusted. ICANN will undertake these studies as soon as is practicable, in consultation with stakeholders. ICANN will also provide public updates on the ongoing process to determine the timing of the next round.

ICANN is also mindful of its commitment in the Affirmation of Commitments to, "organize a review that will examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as effectiveness of (a) the application and evaluation process, and (b) safeguards put in place to mitigate issues involved in the introduction or expansion." \10\

\10\ See <http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm>.

As discussed previously, the New gTLD Program today is created through over six years of policy and implementation work. The policy recommendations to guide the introduction of new gTLDs were created by the ICANN's Generic Names Supporting Organization (GNSO) over a two-year effort through its bottom-up, multi-stakeholder policy development process. The GNSO Council is comprised of all facets of the Internet community: Intellectual Property interests; business and commercial users; ISPs; non-commercial institutions, and ICANN's contracted registries and registrars.

In 2005, the GNSO initiated a formal, Bylaws-defined policy development process on the addition of new gTLDs. Policy recommendations are formed through consensus building among stakeholder groups representing: intellectual property, business, non-commercial interest, Internet service providers, registries and registrars. In the

case of this program and the release of gTLDs in this manner, the GNSO approved the policy recommendations in 2007 by a bylaw described 19-1 vote in favor of the new gTLD Policy (the lone dissenting vote by a non-commercial interest found that the approved model had too many restrictions). The policy recommendations were submitted to ICANN's Board of Directors. In 2008, the ICANN Board approved the recommendations \11\ and directed ICANN staff to commence the implementation phase.

[11] GNSO Final Report on the Introduction of New Top Level Domains ("Final Report"), at <http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-part-a-08aug07.htm> (Aug. 8, 2007); ICANN Board resolution, <http://www.icann.org/en/minutes/resolutions-26jun08.htm> (June 26, 2008); GNSO Minutes, <http://gns0.icann.org/meetings/minutes-gns0-29oct03.html> (Oct. 29, 2003).

Also see The GAC Principles Regarding New gTLDs, at http://gac.icann.org/system/files/gTLD_principles_0.pdf (Mar. 28, 2007).

After the directive to implement, ICANN continued working with the community on the design of the New gTLD Program to meet the policy recommendations. Since 2008, the New gTLD Program has been refined through ten independent expert working groups, 59 explanatory memoranda and independent reports, thousands of comments in no fewer than 47 extended public comment periods, and 1400 pages of comment summary and analysis. All comments were listened to and taken into account across eight versions of the Applicant Guidebook. The Applicant Guidebook implements the consensus policies developed by ICANN's multi-stakeholder community.

Question 3. Cyber-crime is a growing threat to the security and stability of the Internet, with broad and direct public policy and financial impacts. Law enforcement agencies, which have experience combating cyber-crime, have identified a series of specific problems which are limiting their ability to address this growing threat. In 2009, these law enforcement agencies made 12 concrete recommendations to reduce the risk of criminal abuse of the domain name system. It is my understanding that none of the recommendations offered by law enforcement were included in the gTLD expansion program.

a. Can you please explain why ICANN chose not to include these recommendations?

b. How will ICANN cooperate with law enforcement moving forward to make sure that safety concerns are properly addressed?

c. How does ICANN plan to review applications from state-owned enterprises?

d. If problems develop in any of the new gTLDs, how will ICANN be able to adequately monitor and police any abuses or mismanagement?

Answer.

Law Enforcement Recommendations are Being Addressed

As mentioned in response to Senator's Cantwell's Question 2, ICANN is actively working to address all twelve of the law enforcement recommendations referenced in the GAC's October 27, 2011 communication. Specifically, as directed by the Board, ICANN is currently in negotiations with its accredited registrars on amending the Registrar Accreditation Agreement (RAA) to meet the recommendations raised by law enforcement authorities. Amendments are expected to be in force prior to the entry of the first new TLD in 2013.

These negotiations include face-to-face meetings with law enforcement agencies to ensure understanding of law enforcement requirements. The negotiation anticipates substantial and unprecedented steps to improve the accuracy of Whois data. ICANN is taking a strong stand in regard to issues relating to the verification of Whois data and expects the accredited registrars to take action to address the demands of governments and law enforcement worldwide. Updates on the negotiations are available at <https://community.icann.org/display/RAA/Negotiations+Between+ICANN+and+Registrars+to+Amend+the+Registrar+Accreditation+Agreement>.

By February 20, 2012, proposed amendments to address the law enforcement recommendations (and more) will be posted for public comment. One important aspect of the negotiations focuses on the verification of Whois data, and work is underway to plan a targeted forum, including representatives of law enforcement and experts in verification. This forum would be open to the public and is expected to take place before the ICANN meeting in Costa Rica.

Law Enforcement Helped Design New gTLD Protections

Addressing the 12 law enforcement recommendations for improvement to the gTLD registrars is just one part of how ICANN remains responsive to law enforcement. In fact, law enforcement agencies worldwide have worked closely with ICANN in the new gTLD implementation process, with

a goal of reducing domain name abuses. Representatives of U.S. law enforcement agencies played a critical role in proposing standards for background screening for applicants. Law enforcement agencies worldwide, including the FBI, the UK Serious Organized Crimes Agency (SOCA) and the Royal Canadian Mounted Police, supported proposals to aid in the prevention and disruption of efforts to exploit domain name registration procedures for criminal purposes. ICANN has built a relationship with Interpol and discussed safeguards and, in particular, the implementation of meaningful background checks.

My testimony outlined a series of measures to mitigate against malicious conduct in new gTLDs, formed in part through law enforcement recommendation and involvement. Those measures include:

- Background reviews of TLD applicants, including reviews for criminal history (including the use of telecommunications or the Internet to facilitate crimes, illegal sale of drugs, and others);

- Rejection of applications where the applicant has a pattern of adverse decisions under the UDRP (Uniform Domain Name Dispute Resolution Policy), or has been found to act in bad faith or reckless disregard under cybersquatting legislation;

- The requirement to have a plan to implement domain name system security extensions (DNSSEC), reducing the risk of "man-in-the-middle" attacks and spoofed DNS records;

- A requirement to maintain enhanced, or "thick", WHOIS records at the registry level to allow more rapid search capabilities, facilitating efficient resolution of malicious conduct activities;

- A centralized zone file access system to allow for more accurate and rapid identification of key points of contact within each gTLD. This reduces the time necessary to take corrective action within TLDs experiencing malicious activity;

- A requirement to establish a single point of contact responsible for the handling of abuse complaints (as requested by law enforcement authorities);

Requirements that New gTLD Registry Operators must:

- Maintain a Continued Operations Instrument sufficient to fund basic registry operations for a period of three years in case of business failure, to protect consumers and registrants within that gTLD in the event of registry failure.

- Maintain continuity and transition plans, including regular failover testing.

- Cooperate with ICANN in the event transition to a new registry operator is necessary. ICANN will identify an Emergency Back-End Registry Operator to assist in the registry transition process and provide emergency registry services as needed.

DNS abuse and security are regularly the subject of collaborative meetings between ICANN and the U.S. law enforcement community, as well as representatives of international agencies. ICANN expects this successful collaboration to continue. To that end, there are formal "DNS Abuse" sessions at every ICANN public meeting where ICANN and law enforcement representatives come together to advance this important work.

ICANN's relationships with law enforcement are not limited to the New gTLD Program; ICANN coordinates regularly on security-related issues and to address threats to the DNS.

Applications from State-Owned Enterprises

All applications under the New gTLD Program are subject to the same application and evaluation process as laid out in the Applicant Guidebook. As part of the application process, ICANN acts in compliance with all U.S. laws, rules and regulation. This includes the economic and trade sanctions program administered by the Office of Foreign Assets Control (OFAC) of the U.S. Department of the Treasury. ICANN is prohibited from providing most goods or services to residents of sanctioned countries or their governmental entities or to specially

designated nationals and blocked person without an applicable U.S. government authorization or exemption. ICANN generally will not seek a license to provide services (through the gTLD Program or elsewhere) to an individual or entity on the SDN list.

ICANN Commits to Continued Monitoring of New gTLDs

In response to your Question 1, we identify the reviews that ICANN has committed to undertake to assist in identifying the results of this first round. In addition to these reviews, ICANN is committed to a continued monitoring of the effects of the measured rollout of new TLDs, as well as working with law enforcement and the Internet community as a whole to identify new areas of concern and to be proactive in determining how to address new issues as they arise.

Question 4. There are a number of failed top-level domain names from previous ICANN expansions--`.museum" for instance. Unfortunately, such failures can be costly for companies that have registered and they can be disruptive to users. Further, I understand that ICANN's own reports indicate that ``if a new gTLD failed and ceased operation, external costs might be imposed on the Internet community. Registrants . . . might be stranded. . . . Internet users might face increased clutter on the Internet if links fail to resolve."

a. The high-tech companies in Virginia- not to mention Internet users generally--would not welcome such volatility. What, if anything, has been done to address this concern?

Answer. While the .museum registry may not have achieved a level of desired success or adoption, the .museum registry is still operational. No gTLD registries have failed during ICANN's existence. However, the risk of potential failure for a new gTLD registry is an understandable and valid concern. Among other safeguards, ICANN has in place provision for an ``Emergency Back End Registry Provider" to take over operations for a failed registry to ensure the interests of registrants are protected and domain names continue to resolve.

The issue of registry failure has been considered in detail through the work on the New gTLD Program. First, the extensive evaluation process will help assure that only companies that meet the stringent financial requirements are able to operate new TLDs. Of course, this pre-emptive evaluation process may not fully protect against future registry failure, and ICANN has included multiple additional protections within the New gTLD Program to address potential failure.

During the application process, applicants are required to provide evidence that critical functions of the registry will continue to be performed even if the registry fails. This includes a requirement that the costs for maintaining critical registry functions over an extended period of time (between three to five years) be estimated as part of the application process, and registries must have available a Continuing Operations Instrument (funded through a letter of credit or an escrow account) that ICANN may invoke to pay a third party to maintain the critical registry functions.

ICANN is currently working to identify the entity that will serve as an Emergency Back End Registry Operator (EBERO), which will step in to perform the critical registry functions during the three-to-five year period. These provisions are expected to protect registrants against the risk of immediate registry failure.

To facilitate any need for emergency transition, ICANN also requires the escrow of registry data that the EBERO would be allowed to access for the purpose of providing the registry services.

In the event of a termination of a Registry Agreement, and in consultation with the registry operator, ICANN maintains the right to determine whether to transition the operation of a TLD to a successor registry operator as is necessary to protect the public interest. Transition is not required, however, if a registry operator's use of the TLD is for its own exclusive use and all names are registered and maintained by the registry operator.

Question 5. The protection and development of intellectual property is essential to economic growth in technology, and especially important to high-tech entities in Virginia. I am told that ICANN's own experts have said the following: ``There may also be indirect harm from the loss of intellectual property owners' incentives to invest in that intellectual property due to concerns that some of the benefits of that investment would be misappropriated."

a. Is this an accurate statement?

b. Has anything been done to address this issue? If not, why is this expansion going forward in the face of such risks?

Answer. Prior to this rollout, ICANN commissioned five economic studies that examined anticipated benefits and costs of the new gTLD program, the effects of price constraints, and the benefits of vertical

integration. All support a conclusion that Internet users stand to benefit from the introduction of new gTLDs and that potential costs should be mitigated with the introduction of new safeguards.

As part of this work, economists did note that one of the potential external costs that may be imposed through new gTLDs is the impact on investments in intellectual property. However, in the same report, the economists clarified that these external costs can be reduced through the institution of "rules and procedure to protect companies' intellectual property rights." The economists noted that there are a range of effective rights protection mechanisms that balance intellectual property protections against the interests of those with legitimate interests in registering a domain name, including watch lists and sunrise periods. This is discussed in Michael Katz, Gregory Rosston and Theresa Sullivan's report entitled Economic Considerations in the Expansion of Generic Top-Level Domain Names--Phase II Report: Case Studies, available at <http://www.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>.

ICANN, with experts from the intellectual property community, addressed this cost/benefit concern. Trademark experts created rights protection mechanisms that exceed the bar suggested by the economists. The new trademark protection that help protect intellectual property rights and combat abuses include:

Uniform Rapid Suspension: A rapid, inexpensive way to take down infringing domain names;

Trademark Clearinghouse: a one-stop shop so that trademark holders can protect their property right in ALL new TLDs with one registration;

Mandatory sunrise and Trademark Claims processes for all new gTLDs;

The requirement to maintain thick Whois information, provision of centralized access to zone data, and a strong incentive to provide a searchable Whois database--all to make it easier to find infringing parties; and

A post-delegation dispute procedure where rights holders can assert claims directly against TLD registry operators for domain name abuse if the registry has played an active role.

The implementation work to create the New gTLD Program carefully identified risks such as the one raised in your question, and created expert-informed solutions to address those risks. The Katz/Rosston report is just one of five economic studies performed in consideration of the New gTLD Program. All supported a conclusion that Internet users stand to benefit from the introduction of new gTLDs.

The four additional reports are:

Dr. Dennis Carlton, Report Regarding ICANN's Proposed Mechanism for Introducing New gTLDs, at <http://www.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09-en.pdf> ("Carlton I");

Dr. Dennis Carlton, Preliminary Analysis Regarding Price Caps for New gTLD Internet Registries, at <http://www.icann.org/en/topics/new-gtlds/prelim-report-registry-price-caps-04mar09-en.pdf> ("Carlton II");

CRA International, Revisiting Vertical Separation of Registries and Registrars, at <http://www.icann.org/en/topics/new-gtld-crai-report-24oct08-en.pdf>;

Michael Katz, Gregory Rosston and Theresa Sullivan, An Economic Framework for the Analysis of the Expansion of Generic Top-Level Domain Names, at <http://www.icann.org/en/topics/new-gtlds/economic-analysis-of-new-gtlds-16jun10-en.pdf> ("Katz/Rosston Phase I"); and

The reports are detailed. Briefly summarized, the reports indicate that: benefits will accrue from the opening of this market in a way similar to other markets; innovation (and thus benefit) is difficult/impossible to quantify; and costs should be mitigated through the adoption of new trademark and consumer protections.

This work followed the careful consideration of the Internet community through ICANN's bottom-up process.

Given the scope of the economic study already undertaken, as well

as the commitment to measuring the effects of new gTLDs once there is actual data to inform that assessment, the Board and the Governmental Advisory Committee agree that further economic study would not be beneficial prior to the opening of the application round. Instead, the Board and the GAC focused on the collection of information that will inform the analysis of the effects of the introduction of new gTLDs after this first round. The Applicant Guidebook now includes application questions that are specifically targeted to collect information relating to stated purposes and anticipated outcomes of each application, for use in later studies.

Question 6. I've heard a number of questions from industry regarding their concerns with the new TLD system. However, these changes will also impact Internet users. I am concerned that some of my constituents will be confused by the new TLD program at the least and could be exposed to additional consumer harm such as cybersquatting, typosquatting, phishing, malware, etc. If it is more difficult for Internet users to determine whether a website is legitimate, it will be easier for criminals to lure Internet users to fake websites that include malicious content.

a. Can you please explain how the new program will change the Internet for consumers?

b. How will ICANN work to make sure users are aware a coming changes and know how to navigate the new landscape?

What specific safeguards will be put into place to prevent cybersquatting and typosquatting?

Answer. The protections within the New gTLD Program will create TLDs that are more secure for Internet users. For example, all new TLDs are required to implement domain name security extensions (DNSSEC), reducing the risk of "man-in-the-middle" attacks and spoofed DNS records. In terms of user confusion as a result of cybersquatting, the new protections for intellectual property and to mitigate malicious conduct all work to reduce cybersquatting activities in the expanded space. We expect that new TLDs will be a less fertile ground for wrongdoing and, as a result, the Domain Name System, as a whole will be improved. Abuses are prevalent in the larger TLDs, not within the smaller, more differentiated registries.

While there is always some uncertainty and concern with change, Internet users have always proved adept at adapting to change and taking advantage of new, value-added services. In the case of new gTLDs, it is thought that the new landscape will reduce confusion. TLDs that are clearly tied to brands or communities will create consumer awareness and result in more certainty. Also, that brand awareness will build certainty that a domain is what it purports to be--that is, reduce the risks of cybersquatting. As an example, take senate.gov names: users have great certainty that use of a .gov name will reliably lead to a U.S. Government site.

The New gTLD Program allows for community-based TLDs, as well as other TLDs that will have special attributes that may make them attractive to users. For example, work has been conducted towards creating a higher security TLD for the financial services industry, where the registry operator would commit to additional protections for the development of a TLD where consumers know they are making financial transactions in a trusted space. The opportunities that may be available in new gTLDs are endless--the opening of the new gTLD space will allow for creativity and innovation that follows the opening of other markets.

ICANN and the Internet community recognize that there will be a need to educate consumers about the changing landscape of the Internet, and ICANN understands that communication and education is a necessary component of any rollout. ICANN is working with its stakeholder community to plan for this educational work.

Response to Written Questions Submitted by Hon. Olympia J. Snowe to
Kurt Pritz
United Nations Model

Question 1. There has been a growing contingency of other countries critical of the ICANN multi-stakeholder model and about the US' involvement and influence with ICANN. Some governments, not necessarily friendly to the U.S., are seeking to increase their power over the Internet and its governance.

Russia and China (with Tajikistan and Uzbekistan) have proposed to the United Nations an Internet "Code of Conduct," which a senior State Department official stated "they seek to justify the establishment of sovereign government control over Internet resources and over freedom of expression in order to maintain the security of their state."¹³ Even Russian Prime Minister Vladimir Putin remarked recently his desire of "establishing international control over the

Internet using the monitoring and supervisory capabilities of the International Telecommunication Union (ITU).\14"

\13\ http://www.huffingtonpost.com/2011/09/27/russia-china-internet-control_n_984223.html.

\14\ <http://premier.gov.ru/eng/events/news/15601/>.

The other proposal by India, Brazil and South Africa calls for the creation of a new body within the United Nations to oversee Internet policy. As a result, ICANN as well as the Internet Governance Forum (IGF) could be significantly marginalized or hijacked by this new U.N. entity.

These proposals seem to be in direct conflict with our Nation's effort to privatize the Internet through transferring the authority of the DNS to the private sector and for the Internet governance model to be private-sector led.

If the U.S. Government followed the advice to unilaterally delay the gTLD expansion, what do you believe the impact would be globally and do you believe this would fan the flames of anti-U.S. government sentiment with respect to Internet governance? Could it give more momentum to other governments' calls to have the United Nations assert oversight over ICANN or replace it altogether?

Answer. If the U.S. Government or any entity unilaterally modified a decision by ICANN's multistakeholder community, it would undermine if not decimate the legitimacy and credibility of the multistakeholder model. Lawrence Strickling, Assistant Secretary of Commerce for Communications and Information, has spoken forcefully on two recent occasions in support of the multistakeholder model and the danger presented by requests for the U.S. Government to unilaterally modify the new gTLD program. On December 8, 2011,\15\ he addressed these points as follows:

\15\ Remarks of Assistant Secretary Strickling at the Practising Law Institute's 29th Annual Telecommunications Policy & Regulation Conference on December 8, 2011, (available at <http://www.ntia.doc.gov/speechtestimony/2011/remarks-assistant-secretary-strickling-practising-law-institutes-29th-annual-te>).

[W]e are now seeing parties that did not like the outcome of that multistakeholder process trying to collaterally attack the outcome and seek unilateral action by the U.S. government to overturn or delay the product of a six-year multistakeholder process that engaged folks from all over the world. The multistakeholder process does not guarantee that everyone will be satisfied with the outcome. But it is critical to preserving the model of Internet governance that has been so successful to date that all parties respect and work through the process and accept the outcome once a decision is reached. When parties ask us to overturn the outcomes of these processes, no matter how well intentioned the request, they are providing "ammunition" to other countries who attempt to justify their unilateral actions to deny their citizens the free flow of information on the Internet. This we will not do. There is too much at stake

here. [Emphasis added.]

On January 11, 2012 \16\ he stated:

\16\ Remarks by Assistant Secretary Strickling at the Brookings Institution's Center for Technology Innovation, January 11, 2012 (available at <http://www.ntia.doc.gov/speechtestimony/2012/remarks-assistant-secretary-strickling-brookings-institutions-center-technology>).

[M]ultistakeholder processes have succeeded by their very nature of openness and inclusiveness. They are most capable of attacking issues with the speed and flexibility required in

this rapidly changing Internet environment.

Nonetheless, we face challenges to this model even in our own country.

...

For the last six years, ICANN and its many stakeholders have debated the rules for expanding of the domain name system (DNS)--essentially the Internet's address book--through the

introduction of new generic top-level domain names (gTLDs). ICANN's process involved global stakeholders from the business community, civil society, registries, registrars, and governments. Nonetheless, in December we saw parties that did not like the outcome of that multistakeholder process trying to bypass ICANN by seeking unilateral action by the U.S. government to overturn or delay the product of a six-year multistakeholder process that engaged folks from all over the world.

...

Each challenge to the multistakeholder model has implications for Internet governance throughout the world. When parties ask us to overturn the outcomes of these processes, no matter how well-intentioned the request, they are providing "ammunition" to other countries who would like to see governments take control of the Internet.

Question 2. If the U.N. did take control or governments had greater involvement, what impact would that have on American businesses and citizens that utilize the Internet? What impact could it have on Freedom of Speech?

Answer. The Affirmation of Commitments between the U.S. Department of Commerce and ICANN sets out landmark commitments to "(a) ensure that decisions made related to the global technical coordination of the DNS are made in the public interest and are accountable and transparent; (b) preserve the security, stability and resiliency of the DNS; (c) promote competition, consumer trust, and consumer choice in the DNS marketplace; and (d) facilitate international participation in DNS technical coordination."

Some of the commitments that ICANN undertakes include "commitments to: (a) maintain the capacity and ability to coordinate the Internet DNS at the overall level and to work for the maintenance of a single, interoperable Internet; (b) remain a not for profit corporation, headquartered in the United States of America with offices around the world to meet the needs of a global community; and (c) to operate as a multi-stakeholder, private sector led organization with input from the public, for whose benefit ICANN shall in all events act."

While the ICANN model is not perfect, it has shown to be a powerful, dynamic model that is capable of reaching consensus positions on extremely difficult issues. The multistakeholder model that is ICANN is at risk if there is a heightened level of governmental involvement above that exercised today through the Governmental Advisory Committee (GAC). American businesses and citizens are very active in the ICANN model, and continuing to remain accountable to them--along with the global Internet community--is essential to ICANN's mission.

Moving to a U.N. model pushes those stakeholders outside government to an inconsequential role. U.S. businesses would be reduced to influencing the U.S. vote in a one country--one vote model.

Assistant Secretary Strickling and former Ambassador David Gross have spoken eloquently on the negative impact of abandoning the multistakeholder approach to Internet governance issues. In the following excerpts, each describes proposals to give governmental bodies such as the UN's International Telecommunications Union (ITU) exclusive responsibility for Internet governance and standards development. Assistant Secretary Strickling recently described \17\ the proposals and their potential impact as follows:

\17\ Id.

Each challenge to the multistakeholder model has implications

for Internet governance throughout the world.

...

As many of you are aware, this is precisely the challenge we face this December in Dubai, at the World Conference on International Telecommunications (WCIT). This conference, which is hosted by the International Telecommunication Union (ITU), attracts delegates from the ITU's 193 member countries.

...

[S]ome countries have submitted proposals to make ITU standards recommendations mandatory and thus enforceable by treaty, a drastic departure from their current voluntary nature. Some countries have proposed moving oversight of critical Internet

resources into the ITU, including naming and numbering authority from multistakeholder institutions such as ICANN. Many governments have called for the ITU to play a greater role in regulating peering and termination charges in order to compensate for lost telecommunication fees, the so called "bypass phenomenon". Also, in an effort to establish the ITU as an operational authority on international cybersecurity, some more authoritarian countries have proposed to include cybersecurity and cybercrime provisions into the ITRs.

...

The challenge before us is clear. We must continue to make the case that an Internet guided by the open and inclusive processes as articulated in the OECD Policymaking Principles will encourage the rapid economic growth and wealth creation that the Internet has made possible.

It is incumbent upon us to convince other nations that enshrining the Internet in an international treaty will not accomplish these goals. The framework simply will not fit. An Internet constrained by an international treaty will stifle the innovators and entrepreneurs who are responsible for its awesome growth. As FCC Commissioner Robert McDowell recently said, "upending the fundamentals of the multistakeholder model is likely to Balkanize the Internet at best, suffocate it at worst". The states who seek to impose their control over the Internet will only be further removed from its awesome potential.

Former Ambassador David Gross described the proposals and their potential impact as follows:

18 The 2012 World Conference On International Telecommunications: Another Brewing Storm Over Potential UN Regulation Of The Internet," November 2011 (available at <http://www.whoswholegal.com/news/features/article/29378/the-2012-world-conference-international-telecommunications-brewing-storm-potential-un-regulation-internet/>). See also, "Governments vie for control of the Web," by Eliza Krigman, POLITICO Pro, January 18, 2012 (available at <https://www.politicopro.com/story/tech/?id=8499>; subscription required) ("The end result [of adoption of some proposals at the WCIT], American officials warn, would be an Internet more susceptible to censorship and less potent as a tool to foster democracy.")

Once again, many companies in the telecoms and information and communications technology (ICT) sector are facing the spectre of a United Nations agency (in this case the International Telecommunication Union (ITU)) regulating critically important aspects of the Internet as well as substantially expanding its

jurisdiction over the telecoms and ICT industries.

...

Some within the ITU and among its 193 member states would like to see major changes to the treaty, particularly with respect to the Internet as well as wireless, IP-based, and next-generation networks, which have historically been mostly free of intrusive economic and other regulation.

...

The WCIT could lead to new regulations governing how these businesses are run and how such businesses may interact with their customers, partners, and vendors, as well as how they can innovate and provide new and improved services. Moreover, because of the implicit attacks on established mechanisms of Internet governance, the WCIT has the potential to destabilise and politicise standardisation processes and the management of the Internet architecture in a way that could also hinder innovation and efficiency.

Growth of the Internet and expansion of the domain name system

Question 3. The Internet has been so amazingly beneficial to small businesses because it allows them to globally expand their local markets and enables them to compete with Fortune 100 companies because the size of the computer screen is the same for a small business in Bangor as it is for a multi-national corporation like Wal-mart. Small

businesses are the anchor to not only Maine's economy but to our Nation's and the Internet has been invaluable to them.

Supporters of the expansion have stated it will bring new competition and choice to the Internet space and allow the Internet to continue to grow in the number of websites, content, applications, and online services. It also presents businesses new models to harness the boundless benefits of the Internet.

There have already been expansions to top level domains in the past to accommodate for the growth of the Internet, with the intro of gTLDs like .biz, .info, .museum, .mobi, etc.

If the Internet is going to continue to grow shouldn't the domain name system?

Answer. Yes. Since 1998, ICANN has been working to execute on its promise to facilitate competition in the Domain Name System while protecting vital security, consumer and business interests. The New gTLD Program has been carefully crafted over the past six years to achieve this goal. As stated in my written testimony,

A founding mandate for ICANN, included within the United States Government's "White Paper on the Management of Internet Domain Names and Addresses",¹⁹ is to create competition in the domain name market and specifically, to "oversee policy for determining the circumstances under which new TLDs are added to the root system."²⁰ The introduction of new gTLDs "has been a longstanding goal" of the relationship between the Department of Commerce and ICANN.²¹ The relationship formed with the United States Government in 1998, and set out in the many Memoranda of Understanding between the Department of Commerce and ICANN, included a core objective to "Define and implement a predictable strategy for selecting new TLDs."²² This fundamental assumption that increasing the number of gTLDs will increase competition resulted in the House Committee on Energy and Commerce initiating a 2001 hearing regarding the potential detrimental effects to competition when ICANN approved only seven of 200 applied-for TLDs in an earlier application round.²³

¹⁹ United States Department of Commerce, White Paper on the Management of Internet Domain Names and Addresses ("White Paper"), at http://www.ntia.doc.gov/ntiahome/domainname/6_5_98dns.htm (June 6, 1998)

²⁰ Id.

²¹ Testimony of Fiona Alexander, Associate Administrator, National Telecommunications and Information Administration, June 4, 2009, before the Subcommittee on Communications, Technology, and the Internet, Committee on Energy and Commerce, United States House of Representatives, available at <http://www.ntia.doc.gov/speechtestimony/2009/testimony-associate-administrator-fiona-alexander-issues-concerning-internet-co>.

²² See, e.g., Amendment 6 to Memorandum of Understanding Between the U.S. Department of Commerce and The Internet Corporation For Assigned Names And Numbers, at http://www.ntia.doc.gov/ntiahome/domainname/agreements/amendment6_09162003.htm (Sept. 16, 2003).

²³ See Transcript of February 8, 2001 Hearing before the Subcommittee on Telecommunications and the Internet of the Committee on Energy and Commerce, House of Representatives, On Hundred Seventh Congress, First Session, available at <http://archives.energycommerce.house.gov/rearchives/107/hearings/02082001Hearing37/print.htm> ("some view ICANN's approval of only a limited number of names as thwarting competition").

Today, the DNS is continues to grow. The next billion Internet users will be from outside the U.S. but their participation represents opportunity for all businesses and communities. Since 2010, 30 new country code top-level domains in non-Latin scripts have been added to the DNS. These internationalized domain names, or IDN ccTLDs, help bring the Internet to the next billion people. We've seen innovation in the business models for existing country code TLDs, such as .CO (Colombia) and .ME (Macedonia) to take advantage of commercial opportunities waiting in the U.S. and beyond. But only TLDs introduced under the New gTLD Program will provide the significant, mandatory protections I describe in my testimony. The introduction of the New gTLD Program is therefore not just fulfilling a mandate to add competition through the introduction of more TLDs, but also represents the creation of a new, more secure baseline for the expansion of the Domain Name System.

White Paper

Question 4. In the "White Paper," which was released in 1998 and led to the formation of ICANN is competition, has as one of its core

principles is competition--that competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.

Comments in the White Paper \24\ on the issue of new generic top level domains showed ``very strong support for limiting government involvement during the transition period on the matter of adding new gTLDs. Specifically, most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." Also, commenters noted that ``there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution."

\24\ <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>.

Isn't the expansion of gTLD a form of competition, where .hotels or .cars could compete against .com or .biz? If not, why?

Answer. Yes. In response to your Question 3 under the ``Growth of the Internet and expansion of the domain name system" heading, it is noted that the introduction of the New gTLD Program is expected to fulfill ICANN's mandate to introduce competition in the DNS. ICANN does not know all of the potential business models that are contemplated, nor is ICANN in a position to judge or foretell which business models may succeed. That is the role of the market. ICANN's role is to allow for the creation of opportunities in the DNS for marketplace participants to compete, to innovate and to offer users new products and services.

For at least the past two years, future applicants have attended ICANN meetings, passing out marketing materials with their ``dot-NEWDOMAIN" prominently displayed. Consulting businesses to advise applicants have arisen. Over 120 persons or entities have publicly announced their intention to apply for new gTLDs. Nearly 90 declared applicants have active websites marketing their new gTLD idea proposing all types of gTLDs--city names, community ideas, branding opportunities for internationally known corporations and others.

There are other forms of competition in addition to new gTLDs, for example, the introduction of services provided by Twitter and Facebook, and also the increased use of ``apps." However, one form of introducing competition should not foreclose another. The formation of ICANN in 1998 and the potential introduction of new gTLDs have been clearly described as an opportunity for increasing competition, choice and innovation. That introduction has taken place in a careful way, including two limited rounds in 2000 and 2004, the limited introduction of IDNs starting in 2010.

There is tremendous opportunity for innovation, competition and consumer choice within the New gTLD Program.

Question 5. Several commenters also stated ``the market will decide which TLDs succeed and which do not." What is wrong with allowing the market to continue to decide with new gTLDs from the expansion?

Answer. Allowing the market to determine the success of new gTLD offerings is one of the fundamental tenets of the introduction of the New gTLD Program. One of the policy recommendations that serves as the basis for this program is that the introduction of TLDs should only be limited by round, and not by subjective and arbitrary factors. In addition, the economic studies, described in response to Senator Warner's Question 5, support that competition results from the opening of markets--not by imposing artificial limitations such as number or type.

One of those economists, Dr. Dennis Carlton, Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice from October 2006 through January 2008, explained: ``ICANN's plan to introduce new gTLDs is likely to benefit consumers by facilitating entry which would be expected both to bring new services to consumers and mitigate market power associated with .com and other major TLDs and to increase innovation." \25\ Delay will inhibit competition in the use of generic, non-trademarked terms, and runs counter to the generally accepted view that market entry benefits consumers by expanding output and lowering price. Potential innovations in the new gTLD namespace will be stifled if limitations to entry are imposed, which would ``essentially freeze the number of TLDs fifteen years after the first commercial development of the Internet." \26\

\25\ Dr. Dennis Carlton, Report Regarding ICANN's Proposed Mechanism for Introducing New gTLDs, at <http://www.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09>

en.pdf at paragraph 23.
\\26\ Id.

The introduction of new gTLDs will also serve to alleviate issues in existing market conditions: concentration within some existing registries, most generic strings unavailable, and those that trade on the value of the current marketplace holding portfolios based upon the value of current .COM names.\\27\

\\27\ Katz/Rosston Phase II, at paragraphs 75-76.

While the market should decide which TLDs succeed and which do not, we understand the valid concerns associated with registry failure and ICANN has put into place consumer interest protections.

Among other safeguards, ICANN has in place provision for an "Emergency Back End Registry Provider" to take over operations for a failed registry to ensure the interests of registrants are protected and domain names continue to resolve.

The issue of registry failure has been considered in detail through the work on the New gTLD Program. First, the extensive evaluation process will help assure that only companies that meet the stringent financial requirements are able to operate new TLDs. Of course, this pre-emptive evaluation process may not fully protect against future registry failure, and ICANN has included multiple additional protections within the New gTLD Program to address potential failure.

During the application process, applicants are required to provide evidence that critical functions of the registry will continue to be performed even if the registry fails. This includes a requirement that the costs for maintaining critical registry functions over an extended period of time (between three to five years) be estimated as part of the application process, and registries must have available a Continuing Operations Instrument (funded through a letter of credit or an escrow account) that ICANN may invoke to pay a third party to maintain the critical registry functions.

ICANN is currently working to identify the entity that will serve as an Emergency Back End Registry Operator (EBERO), which will step in to perform the critical registry functions during the three-to-five year period. These provisions are expected to protect registrants against the risk of immediate registry failure.

To facilitate any need for emergency transition, ICANN also requires the escrow of registry data that the EBERO would be allowed to access for the purpose of providing the registry services.

In the event of a termination of a Registry Agreement, and in consultation with the registry operator, ICANN maintains the right to determine whether to transition the operation of a TLD to a successor registry operator as is necessary to protect the public interest. Transition is not required, however, if a registry operator's use of the TLD is for its own exclusive use and all names are registered and maintained by the registry operator.

ICANN's past experience with its 2000 and 2004 pilot programs on the introduction of new gTLDs, described in response to Senator McCaskill's Question 2, represent limited expansion. ICANN learned valuable lessons from each of these rounds: First, new TLDs can safely be added to the DNS. Second, the imposition of artificial restrictions on the rounds, such as the numerical restriction imposed in 2000 and the type-restriction imposed in 2004 place ICANN in the position of picking winners and losers, as opposed to fulfilling its mission of facilitating competition in the DNS. Artificial restrictions also create incentives for applicants to work to fit their TLD ideas into categories that may not be a true fit.

Today's New gTLD Program instead allows for competition tempered by the suite of new protections for trademark owners and Internet users. Choice and competition will be introduced in a more secure environment than ever before.

Question 6. If commenters are correct that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution" then why should we place "artificial or arbitrary" limits on the Internet?

Answer. Today's New gTLD Program is balanced so as not to impose artificial or arbitrary limits of any kind. Limits on the Program were created to safeguard specific, important interests, for example, property rights and community interests. The mandatory rights protection mechanisms in place for the New gTLD Program are broader than the protections offered to trademark holders in the rollout of any other media of which I am aware. However, the rights protection mechanisms were carefully crafted, balancing the input of trademark experts against third parties with legitimate rights to register domain names. To that end, including the suite of trademark protections in the

New gTLD Program is not an "artificial or arbitrary" limit on the Internet and ICANN is committed to enforce the mandatory requirements. The creation of trademark protections is also supported by the economic analysis described in response to Senator Warner's Question 5.

The protections that exist are careful and balanced. Further, ICANN has agreed to undertake studies of a post-launch review on the feasibility of enhancing both the scope of the words registered within the Trademark Clearinghouse and the length of the Trademark Claims notification process. If further protection is warranted and feasible, these enhanced protections could be included in future gTLD application rounds. Imposition of drastic limitations--and creating rights that are neither justified on the basis of experience nor recognized in other areas--could impair the ability for competition to flourish in new gTLDs.

Expansion of Internet Addresses

Question 7. The Internet has revolutionized some many different areas of society and the economy. The innovation, adoption, and sheer size of the Internet are simply unparalleled. The Internet currently comprises of approximately 2 billion users and more than five billion devices. Cisco estimates there will be more than 50 billion Internet connected devices by 2020.

However, we have for the most part exhausted the existing pool of Internet address--IPv4 provides for approximately 4.3 billion addresses. The shortage has been the driving factor in creating and adopting several new technologies as well as new and larger addressing system, known as IP version 6. This migration from a 32-bit addressing space to a 128-bit addressing, will provide 340 trillion, trillion, trillion separate addresses--enough for every human bring to use many trillions of address. With IPv6, there will be approximately 670,000 IP addresses for every squared nanometer of the earth's service. To put that into perspective, a human hair is 100,000 nanometers wide.

However, the implementation of IPv6 has been somewhat slow. Last year, I read only about 20 percent of the Internet was IPv6 compatible and while a recent survey shows adoption of IPv6 grew by 1,900 percent over the past 12 months that results in only about 25 percent of .com, .net, and .org Internet subdomains.

What is the status of the migration to IPv6 and what will it mean for Internet users and businesses, domestic and globally?

Answer. While universal IPv6 deployment is likely to obviate the need for IPv4 deployments in the long-term, the short and medium-term is likely to see Internet networks running both protocols side-by-side for years to come. As such, migration away from IPv4 is a less important goal than the widespread deployment of IPv6.

The status of IPv6 deployment can be measured both quantitatively and qualitatively. Quantitatively, over 7,500 IPv6 address blocks had been allocated to network operators around the globe by the end of September 2011 ^{\28\} and by January 2012, the American Registry for Internet Numbers (ARIN) allocated IPv6 address blocks to over 2,300 networks in the USA ^{\29\} alone. Almost 6,700 ^{\30\} IPv6 networks were publicly routed on the Internet in January 2012, which is approximately 17 percent ^{\31\} of Internet networks.

^{\28\} http://www.nro.net/wp-content/uploads/nro_stats_2011_q3.pdf.

^{\29\} <ftp://ftp.arin.net/pub/stats/arin/>

^{\30\} <http://www.cidr-report.org/v6/as6447/index.html>.

^{\31\} <http://www.cidr-report.org/as2.0/>.

Qualitatively, IPv6 deployments have undergone testing and are now being made as part of ISPs and content providers' standard services. World IPv6 Day ^{\32\} in June 2011 was a coordinated test of IPv6 by including Google, Facebook, Yahoo!, Akamai and Limelight Networks, together with over 1,000 website operators. It was a success, and June 6, 2012 will see the World IPv6 Launch, in which major ISPs, home networking equipment manufacturers and web companies around the world are coming together to permanently enable IPv6 for their products and services.

^{\32\} <http://www.worldipv6day.org/>.

While June's World IPv6 Launch is not a flag day, the combination of successful testing and market leading deployment is expected to provide an incentive to other Internet businesses and help raise awareness with non-Internet businesses. Some businesses may note that they need to update systems to allow for IPv6 deployment, though regular updating of systems to meet with technological advances is a normal cost of business. However, successful IPv6 deployment should be seamless for Internet users, whose computer operating systems have been IPv6 capable for some years already.

Question 8. Is there anything governments can do to encourage faster adoption of IPv6 as well as increase awareness to businesses and citizens about the migration?

Answer. From ICANN's perspective, public support for adoption of IPv6 can help increase awareness of the deployment of IPv6, as well as provide incentives for Internet-related businesses to engineer products that are capable of IPv6 deployment. For example, in 2005, the United States Office of Management and Budget (OMB) mandated ^{\33\} that Federal agencies initiate the transition to IPv6. The target readiness date was June 2008. In September 2010 the OMB released a further memorandum ^{\34\} setting out additional deadlines for the Federal IPv6 transition. Other national governments have introduced similar roadmaps. Examples include Australia's 2009 Strategy for the Implementation of IPv6 in Australian Government Agencies ^{\35\} and the European Commission's Action Plan for the deployment of Internet Protocol version 6 (IPv6) in Europe.^{\36\} The latter has guided deployment in governments throughout Europe, including Germany.^{\37\}

^{\33\} http://www.cio.gov/documents/Transition_Planning_for_IPv6.pdf.

^{\34\} <http://www.cio.gov/Documents/IPv6MemoFINAL.pdf>.

^{\35\} http://www.finance.gov.au/e-government/infrastructure/docs/Endorsed_Strategy_for_the_Transition_to_IPv6_for_Australian_Government_agencies.pdf.

^{\36\} http://ec.europa.eu/information_society/policy/ipv6/docs/european_day/communication_final_27052008_en.pdf.

^{\37\} <http://ripe58.ripe.net/content/presentations/ipv6-in-germany.pdf>.

Mandates such as OMB's 2005 timeline have helped establish demand for IPv6 feature sets, as customers now require those features in equipment purchases. As such, governments have contributed to the success of World IPv6 Day in 2011, which readied the stage for this year's World IPv6 Launch.

Response to Written Questions Submitted by Hon. Olympia J. Snowe to Angela Williams
United Nations Model

Question 1. There has been a growing contingency of other countries critical of the ICANN multi-stakeholder model and about the US' involvement and influence with ICANN. Some governments, not necessarily friendly to the U.S., are seeking to increase their power over the Internet and its governance.

Russia and China (with Tajikistan and Uzbekistan) have proposed to the United Nations an Internet "Code of Conduct," which a senior State Department official stated "they seek to justify the establishment of sovereign government control over Internet resources and over freedom of expression in order to maintain the security of their state."^{1\} Even Russian Prime Minister Vladimir Putin remarked recently his desire of "establishing international control over the Internet using the monitoring and supervisory capabilities of the International Telecommunication Union (ITU)."^{2\}

^{\1\} http://www.huffingtonpost.com/2011/09/27/russia-china-internet-control_n_984223.html.

^{\2\} <http://premier.gov.ru/eng/events/news/15601/>.

The other proposal by India, Brazil and South Africa calls for the creation of a new body within the United Nations to oversee Internet policy. As a result, ICANN as well as the Internet Governance Forum (IGF) could be significantly marginalized or hijacked by this new UN entity.

These proposals seem to be in direct conflict with our Nation's effort to privatize the Internet through transferring the authority of the DNS to the private sector and for the Internet governance model to be private-sector led.

If the U.S. Government followed the advice to unilaterally delay the gTLD expansion, what do you believe the impact would be globally and do you believe this would fan the flames of anti-U.S. government sentiment with respect to Internet governance? Could it give more momentum to other governments' calls to have the United Nations assert oversight over ICANN or replace it altogether?

Answer. The YMCA of the USA ("Y-USA") did not enter testimony requesting that ICANN delay its new gTLD Program. Our testimony primarily focused on the financial impact the new gTLD Program would have on the not-for-profit sector. It is hard for us to predict what the global impact would be or whether it would give other countries momentum to call for the United Nation's involvement in Internet governance if the new gTLD Program were to be delayed. Nevertheless,

ICANN's irresponsible launch of the new gTLD Program with an implementation plan that does not adequately address consumer protection or the financial burdens for our organizations could have a negative impact on the not-for-profit sector. Further, we suspect that anti-government sentiments will continue to be prevalent regardless of ICANN's decision.

Question 2. If the U.N. did take control or governments had greater involvement, what impact would that have on American businesses and citizens that utilizes the Internet? What impact could it have on Freedom of Speech?

Answer. Based on U.S. laws, American citizens, companies and not-for-profit organizations are able to fully engage in ecommerce, humanitarian and educational pursuits and commentary and free expression on the Internet. The Y-USA does not believe that ICANN's new gTLD Program will affect these protections. Furthermore, the Y-USA is unaware of any data, studies or research that analyze the potential effect the United Nations or government would have on businesses or citizens should they take control of the Internet.

Growth of the Internet and expansion of the domain name system

Question 3. The Internet has been so amazingly beneficial to small businesses because it allows them to globally expand their local markets and enables them to compete with Fortune 100 companies because the size of the computer screen is the same for a small business in Bangor as it is for a multi-national corporation like Wal-mart. [sic] Small businesses are the anchor to not only Maine's economy but to our Nation's and the Internet has been invaluable to them.

Supporters of the expansion have stated it will bring new competition and choice to the Internet space and allow the Internet to continue to grow in the number of websites, content, applications, and online services. It also presents businesses new models to harness the boundless benefits of the Internet.

There have already been expansions to top level domains in the past to accommodate for the growth of the Internet, with the intro of gTLDs like .biz, .info, .museum, .mobi, etc. Given that there have already been two expansions of top level domains, it seems difficult to simply state that there shouldn't be any additional top-level domains for the Internet. The Internet is all about expansion and innovation, after all. Are you really saying we already have all the top-level domains the Internet will ever need?

Answer. Y-USA did not enter testimony suggesting that the Internet should not be expanded. Again, our testimony primarily focused on the financial impact the new gTLD Program would have on the not-for-profit sector. It is our assertion that not-for-profits (for those that can afford to) should not be required to use the humanitarian contributions it receives to (1) change its business model to operate as a domain name registry; and/or (2) file countless defensive top level and second level domain name registrations to protect its intellectual property against cyber squatters seeking profit off their names.

Question 4. If the Internet is going to continue to grow shouldn't the domain name system?

Answer. The domain name system can grow, but in a way that protects businesses, and affords the not-for-profit sector meaningful input and access as global stakeholders.

Question 5. Putting aside your request for delay, are there specific improvements you would recommend in the gTLD program that would address your concerns?

Answer. Y-USA testified as a not-for-profit organization and as a member of ICANN's newly-formed Not-for-Profit Operational Concerns Constituency ("NPOC"). We did not request that the new gTLD Program be delayed. Instead we offered the following recommendations:

That verified not-for-profit organizations be permitted to exempt their trademarks from any other applicant in the new gTLD program at no cost, or if that is not possible, then at a drastically reduced fee;

That the mechanisms for trademark protection be significantly strengthened, with the ability to proactively protect trademark owners before any application is accepted; and

That the costs to participate in the new gTLD program for verified not-for-profit organizations be eliminated.
White Paper

Question 6. In the "White Paper," which was released in 1998 and led to the formation of ICANN is competition, has as one of its core

principles is competition--that competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.

Comments in the White Paper \3\ on the issue of new generic top level domains showed ``very strong support for limiting government involvement during the transition period on the matter of adding new gTLDs. Specifically, most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." Also, commenters noted that ``there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution." Isn't the expansion of gTLD a form of competition, where .hotels or .cars could compete against .com or .biz? If not, why?

\3\ <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>.

Answer. Y-USA is of the opinion that expansion of the gTLD program could be a form of healthy competition if there is a demonstrated need for the expansion and an articulated rationale supporting the scope of the expansion (e.g., the number of new TLDs to be introduced). ICANN has estimated 200-1000 new gTLDs within the first launch phase. Rollouts of new gTLDs such as .biz, .mobi, etc., were staggered. Y-USA and we suspect many other not-for-profits and businesses, filed defensive domain name registrations during these expansions, rather than using the new domain names to support an innovative business plan, or to offer new content or services for our communities. For example, a new gTLD for ``.xxx" was recently launched for the adult entertainment industry. We filed a defensive registration for ``ymca.xxx" at the cost of \$300. Should there be a need for our organization and/or other not-for-profits organizations to file hundreds of defensive registrations with no plans to actually use them or incorporate them in our business plans, the costs and impact to do so could be staggering. Our sector not only prefers to, but must, use our monies to provide critical services to our communities.

Question 7. As stated the white paper highlighted that ``most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." What has happened since the inception of ICANN that warrants the United States Government from ignoring these initially comments from U.S. and non-U.S. stakeholders that ICANN should decide the issue of new gTLDs?

Answer. Y-USA is not well versed in the nuances of the evolution of Internet governance.

Question 8. Several commenters also stated ``the market will decide which TLDs succeed and which do not." What is wrong with allowing the market to continue to decide with new gTLDs from the expansion?

Answer. Y-USA is in favor of the market deciding which new gTLDs will succeed. However, what concerns us are the costs for not-for-profits to participate in the expansion (including defending its intellectual property rights) of the Internet with humanitarian monies donated for our worthy causes. Unfortunately, not-for profit organizations will have to allocate financial and human resources to defend their brand and intellectual property early in the process and long before the market determines whether these new gTLDs are successful. Our sector not only prefers to, but must, use our monies to provide critical services to our communities.

Question 9. If commenters are correct that ``there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution" then why should we place ``artificial or arbitrary" limits on the Internet?

Answer. Y-USA does not favor restricting or limiting the internet. Again, what concerns us is the costs for not-for-profits to participate in the expansion (and defend its brand and intellectual property rights) of the Internet with humanitarian monies donated for our worthy causes. Unfortunately, expansion without limits will place not-for profit organizations in the position to allocate financial and human resources to defend their brand and intellectual property, well before these new top level domains are proven successful. For some new domains, if history is a predictor, most of the registrations for second level domain names will come from companies and organizations defensively registering their names.

Response to Written Question Submitted by Hon. Maria Cantwell to
Daniel L. Jaffe

Cracking down on rogue websites

Question. Mr. Jaffe, do you believe that the increase in top level domains combined with all the requirements ICANN is putting in place will make it easier, more difficult, or not change the ability of U.S. authorities to crack down on Internet sites--to use the phrase--that are dedicated to infringing activity?

Answer: We believe an unlimited expansion of the TLDs would make it much more difficult for U.S. authorities to crack down on "rogue" Internet sites. This is a serious challenge in today's environment with 22 TLDs so an unlimited expansion would increase the problem exponentially. In 2009, an international coalition of law enforcement agencies including the U.S. Department of Justice and the FBI issued a set of 12 specific law enforcement recommendations to ICANN. None of those recommendations has been adopted. In a very detailed letter to ICANN dated December 16, 2011, the Federal Trade Commission (FTC) stated that the TLD expansion presented a "dramatically increased opportunity for consumer fraud, distribution of malware, and proliferation of other malicious activity. . ." The Commission made five specific recommendations to ICANN to address before any new TLDs are approved. We believe it is critical that ICANN fully implement the recommendations of the FTC and other law enforcement agencies from around the world.

Response to Written Question Submitted by Hon. Claire McCaskill to
Daniel L. Jaffe

Question. I recognize that ICANN has put a tremendous amount of work and study into the planned expansion of top-level domain names. There have been a number of economic studies, dozens of comment periods and seven versions of the Applicant Guidebook before the final one was issued. ICANN clearly views the expansion of gTLDs as vital to the growth and viability of the Internet.

Given how much time, effort and study has been put into this decision, I find it disturbing that there is still so much dispute about expansion. There is clearly a lack of consensus about these changes in the business and non-profit industries as well as concerns from law enforcement. This is not a decision to be taken lightly and I believe there needs to be better agreement on the outstanding issues from all interested parties.

Both of you have very differing opinions about the implications of the gTLD expansion. Why has it taken this long to get this out in the open?

Mr. Jaffe, there was an extensive comment period before the guidelines were issued, which I'm sure you were aware of--did you and other industries fully participate in the process? Do you disagree with the economic studies that ICANN has cited saying this would increase competition and innovation? If so, why?

Mr. Fritz, how much weight was given to the concerns raised by Mr. Jaffe and others with his viewpoints? The danger of increased copyright infringement appears to be a legitimate issue--do you agree?

Answer. ANA and many other business groups and companies have been actively participating in the ICANN process for several years. We filed detailed comments with ICANN in 2008 and 2009 expressing our serious concerns about the unlimited TLD expansion. Many companies have attended the numerous meetings around the world of the ICANN board to express similar concerns. Unfortunately, the strong objections raised by ANA and a very broad cross-section of the international business community have largely fallen on deaf ears with ICANN. We seriously challenge the economic analysis that has been put forward by ICANN. An unlimited expansion of the TLDs will cost the business community billions of dollars. The only voices speaking in favor of the expansion are registrars, registries and others who will directly profit from the roll-out. The broader Internet business community, including the 161 members of the Coalition for Responsible Internet Domain Oversight (CRIDO) is strongly opposed to the current program.

Response to Written Questions Submitted by Hon. Olympia J. Snowe to
Daniel L. Jaffe

United Nations Model

Question 1. There has been a growing contingency of other countries critical of the ICANN multi-stakeholder model and about the US' involvement and influence with ICANN. Some governments, not necessarily friendly to the U.S., are seeking to increase their power over the Internet and its governance.

Russia and China (with Tajikistan and Uzbekistan) have proposed to the United Nations an Internet "Code of Conduct," which a senior

State Department official stated ``they seek to justify the establishment of sovereign government control over Internet resources and over freedom of expression in order to maintain the security of their state.\1" Even Russian Prime Minister Vladimir Putin remarked recently his desire of ``establishing international control over the Internet using the monitoring and supervisory capabilities of the International Telecommunication Union (ITU).\2"

\1\ http://www.huffingtonpost.com/2011/09/27/russia-china-internet-control_n_984223.html.

\2\ <http://premier.gov.ru/eng/events/news/15601/>.

The other proposal by India, Brazil and South Africa calls for the creation of a new body within the United Nations to oversee Internet policy. As a result, ICANN as well as the Internet Governance Forum (IGF) could be significantly marginalized or hijacked by this new UN entity.

These proposals seem to be in direct conflict with our Nation's effort to privatize the Internet through transferring the authority of the DNS to the private sector and for the Internet governance model to be private-sector led.

If the U.S. Government followed the advice to unilaterally delay the gTLD expansion, what do you believe the impact would be globally and do you believe this would fan the flames of anti-U.S. government sentiment with respect to Internet governance? Could it give more momentum to other governments' calls to have the United Nations assert oversight over ICANN or replace it altogether?

Answer. We do not believe that a delay in the TLD expansion or a pilot project involving a smaller number of new TLDs would have negative implications for the role of ICANN in Internet governance. Indeed, given the serious concerns that have been expressed by the international law enforcement community, more than 30 IGOs and a broad cross-section of the international business community, it would be a reckless experiment for ICANN to proceed full speed ahead with the unlimited expansion. A failed and costly program that hurts both consumers and businesses could drastically undermine the foundations of ICANN and its supervisory role over TLDs.

Question 2. If the U.N. did take control or governments had greater involvement, what impact would that have on American businesses and citizens that utilize the Internet? What impact could it have on Freedom of Speech?

Answer. We do not advocate that the U.S. government or any other government control the Internet. We also do not seek the abolition of ICANN. A private sector led multi-stakeholder process that truly achieves consensus will result in an online environment that encourages creativity and innovation for all the citizens of the world.

Unfortunately, we do not believe that these goals have been fostered by ICANN's current TLD program.

Self-Regulation vs. Government Intervention

Question 3. In a letter and petition, submitted by the Association of National Advertisers and other organizations to Commerce Secretary Bryson, on November 10, 2011, you express your ``strong opposition to the new Top Level Domain (TLD) program that was approved by the Internet Corporation for Assigned Names and Numbers (ICANN) on June 20, 2011." The petition then calls for the Department of Commerce and NTIA to use all of its best efforts to persuade ICANN to postpone the opening of the Top Level Domain application window. The ANA and the other petitioners are basically calling for the government intervention.

However, in comments the filed, in June 2010, with respect to the Department of Commerce's Notice of Inquiry on information privacy and innovation in the Internet economy, ANA and some of the same organizations that voiced for government intervention on ICANN, praised the virtues of self-regulation and that ``existing and emerging robust self-regulatory principles address privacy concerns while ensuring that the Internet can thrive, thereby benefiting consumers and the U.S. economy." The petition went on to state that self-regulation ensures ``the marketplace is not stifled or smothered by overreaching and rigid regulation." So you all are warning against government intervention with respect to online privacy.

These petitions seem in direct conflict with each other--on one issue you want the government to intervene but on another you don't. Can you provide clarity as to why this is because it doesn't seem consistent?

Answer. We do not believe that industry self-regulation and reasonable regulation by the government in certain areas are mutually exclusive. For example, in the privacy arena, we have always agreed that there are certain sensitive areas (health and financial

information and children) where there is a legitimate interest for reasonable government regulation. Thus, we have supported the privacy regimes of Gramm-Leach-Bliley, HIPPA and the Children's Online Privacy Protection Act (COPPA). However, for non-sensitive information, we continue to believe that the privacy interests of consumers can be best protected through strong, effective industry self-regulation. For that reason, we were one of the founding partners of the Self-Regulatory Program for Online Behavioral Advertising (OBA).

With regard to ICANN, we have never sought direct government intervention by the Department of Commerce. We support the role that ICANN plays as part of a multi-stakeholder approach. However, it is critical that the various requirements regarding the public interest, consumer trust and public benefits that are contained in the Affirmation of Commitments between ICANN and the Department of Commerce are being adequately fulfilled. ICANN was provided authority over key functions of the Internet under the Affirmation of Commitments with the Department of Commerce. If ICANN fails to uphold these commitments, then the DOC must provide assurance that the legitimate concerns of businesses and consumers will be met.

Question 4. Do you believe this intervention you request is counter to the "Framework for Global Electronic Commerce" working paper, which its first principle is "the private sector should lead" and that "governments should encourage industry self-regulation wherever appropriate and support the efforts of private sector organizations to develop mechanisms to facilitate the successful operation of the Internet?"

This intervention also seems in direct conflict with the Commerce Department's Commitments in the Affirmation of Commitments (AoC), where it is written the Commerce Department "affirms its commitment to a multi-stakeholder, private sector led, bottom-up policy development model." Could Commerce's involvement in delaying the gTLD expansion be perceived as renegeing on this commitment within the AoC?

Answer. We do not believe that our request to the Department of Commerce is inconsistent with either the "Framework for Global Electronic Commerce" or the Affirmation of Commitments. We do not advocate that the U.S. government or any government control the Internet. However, that does not mean that the Commerce Department has no role to play in the broad governance of the Internet. Indeed, as a member of ICANN's Governmental Advisory Committee (GAC), the Commerce Department is a vital part of the multi-stakeholder global community. In addition, ICANN made a number of specific promises in the Affirmation of Commitments between ICANN and the NTIA, in exchange for the considerable power to oversee the Internet that was delegated to ICANN by the U.S. government. It has become very clear over the last several months that the process followed by ICANN on the TLD proposal has not achieved consensus among all of the stakeholders. If ICANN is to maintain the trust in its ability to act for the public benefit that is critical to its continued success as a private, not-for-profit Internet governance body, the Commerce Department has a vital role to play to protect the interest of American consumers and businesses. Growth of the Internet and expansion of the domain name system

Question 5. The Internet has been so amazingly beneficial to small businesses because it allows them to globally expand their local markets and enables them to compete with Fortune 100 companies because the size of the computer screen is the same for a small business in Bangor as it is for a multi-national corporation like Wall-mart. Small businesses are the anchor to not only Maine's economy but to our Nation's and the Internet has been invaluable to them.

Supporters of the expansion have stated it will bring new competition and choice to the Internet space and allow the Internet to continue to grow in the number of websites, content, applications, and online services. It also presents businesses new models to harness the boundless benefits of the Internet.

There have already been expansions to top level domains in the past to accommodate for the growth of the Internet, with the intro of gTLDs like .biz, .info, .museum, .mobi, etc.

Given that there have already been two expansions of top level domains, it seems difficult to simply state that there shouldn't be any additional top-level domains for the Internet. The Internet is all about expansion and innovation, after all. Are you really saying we already have all the top-level domains the Internet will ever need?

Answer. We have never said that there is something sacrosanct about maintaining the existing 22 TLDs unaltered. However, it has become clear over the past several months that there is serious opposition to the unlimited expansion that ICANN has proposed. That opposition comes not just from the business community, but also from law enforcement and consumer protections agencies, IGOs, and the non-profit community.

Furthermore, the proposed added protections that ICANN states will

provide protection for the Top Level Domain system have never been tested in a pilot project. It is reckless to have such a broad expansion of the Domain Name System without this more limited test.

Question 6. If the Internet is going to continue to grow shouldn't the domain name system?

Answer. There is no scarcity of space within the existing domain name system, so the ICANN program seems to be a solution in search of a problem. Most of the current TLD names are minimally used, but brand owners nevertheless spend millions of dollars policing them to protect against trademark dilution, cybersquatting and the online sale of pirated or counterfeit products. Those costs and dangers would expand exponentially under the ICANN program. The broad Internet business community is not calling for this unlimited expansion. The expansion of domains should be based on a careful analysis of costs and benefits, and we do not believe that ICANN's analysis has been adequate to date.

Question 7. Putting aside your request for delay, are there specific improvements you would recommend in the gTLD program that would address your concerns?

Answer. In a very detailed letter to ICANN dated December 16, 2011, the Federal Trade Commission (FTC) stated that the TLD expansion presented a "dramatically increased opportunity for consumer fraud, distribution of malware, and proliferation of other malicious activity. . ." The Commission made five specific recommendations for ICANN to responsibly address before any new TLD applications are approved. The FTC letter is available at: www.ftc.gov/os/closings/publicltrs/111216letter-to-icann.pdf.

We believe it is critical that ICANN fully implements the consumer protection recommendations of the FTC. ANA recently wrote to Assistant Secretary Lawrence Strickling at the NTIA, urging the Commerce Department to ensure that ICANN adopts those recommendations. We believe it is critical that NTIA play a more proactive role in this area by providing specific timetables and benchmarks for ICANN to meet as well as specific consequences if they fall short. We also have recommended a "Do Not Sell" list that would allow companies to temporarily protect their trademarks from registration without paying registration fees. A copy of our letter is attached for your information.

White Paper

Question 8. In the "White Paper," which was released in 1998 and led to the formation of ICANN is competition, has as one of its core principles is competition--that competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.

Comments in the White Paper³ on the issue of new generic top level domains showed "very strong support for limiting government involvement during the transition period on the matter of adding new gTLDs. Specifically, most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." Also, commenters noted that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution."

³ <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>.

Isn't the expansion of gTLD a form of competition, where .hotels or .cars could compete against .com or .biz? If not, why?

Answer. ANA's member companies operate in very competitive markets and strongly support free, fair and open competition. There may be situations where individual companies or a specific industry (such as the hotel or automobile industry) decide there are significant benefits to be gained through new TLDs. However, that is not the case we have with the current ICANN program. Rather than a targeted or limited expansion based on specific demand from companies or industries or consumers, ICANN has decided to embark on a veritable names rush, an unlimited expansion that will impose enormous costs on brand owners.

Question 9. As stated the white paper highlighted that "most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." What has happened since the inception of ICANN that warrants the United States Government from ignoring these initially comments from U.S. and non-U.S. stakeholders that ICANN should decide the issue of new gTLDs?

Answer. We agree that the decision about expanding TLDs must

ultimately be made by ICANN. However, the decision-making process must be fair, open and impartial and consistent with the promises ICANN has made with the Department of Commerce in the Affirmation of Commitments. ICANN has been considering this program for several years, but has largely ignored the serious concerns expressed by the business community as well as the international law enforcement community during that time period. Even now, after two Congressional hearings and a growing chorus of opposition from across the Internet community, ICANN's response is "pay now and trust us to make changes later." There must be some mechanism to hold ICANN accountable and NTIA and the other members of the Governmental Advisory Committee must occupy that role.

Question 10. Several commenters also stated "the market will decide which TLDs succeed and which do not." What is wrong with allowing the market to continue to decide with new gTLDs from the expansion?

Answer. If ICANN's program was likely to enhance competition and expand the Internet marketplace, you would expect broad statements of support for it from multiple stakeholders. That is most certainly not the case here. The more scrutiny it has received, the more groups have strongly concluded that the program is not ready to be rolled out. This program has multi-billion dollar implications for all marketers and consumers. For example, in a December 16, 2011 letter to ICANN, the Federal Trade Commission (FTC) noted that ICANN has failed for over a decade to address serious issues with the WHOIS database, which is critical to protecting consumers in cyberspace. The Commission also noted the serious conflict of interest issues that have been raised about ICANN's vote to approve the TLD expansion. Those issues raise fundamental concerns about whether the program is truly a fair and open marketplace.

Question 11. If commenters are correct that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution" then why should we place "artificial or arbitrary" limits on the Internet?

Answer. The unlimited expansion of TLDs would dramatically increase the cost and complexity for trademark holders to protect their rights. The immediate cost imposed on businesses is likely to be in the billions of dollars. Applying for a new Top Level Domain name will require an extraordinarily expensive registration fee of \$185,000 as well as a minimum cost of \$25,000 paid annually to ICANN over the ten-year contractual commitment that successful applicants must make. Costs will further escalate at the second level of naming--the word to the left of the "dot"--as brand owners will have to consider registering each of their brand-related terms, for either commercial or defensive purposes.

Some have estimated that, for a typical company, the cost of acquiring a single gTLD and managing it over the initial commitment of ten years could easily exceed \$2 million, including expenses for the application process, operations, disputes, and related legal services. The costs associated with trademark monitoring and protection in all the new gTLD spaces will run even higher. Some members of ANA and the Coalition for Responsible Internet Domain oversight (CRIDO) spend over \$1 million a year today to enforce against cybersquatting and fraud in the existing 22 gTLD spaces. These numbers will clearly escalate if ICANN's proposal goes forward. In addition, many companies may face an auction for a generic Top Level Domain, which will result in higher costs to ICANN's benefit. Many companies have hundreds or even thousands of brands to defend. Brand owners will face a Hobson's choice of either being compelled to spend substantial resources to acquire and manage new gTLDs or risk the harm to their brands that could occur if they take no action. This has certainly been the message spoken loud and clear to us from our members and the many groups within CRIDO.

Response to Written Question Submitted by Hon. Maria Cantwell to
Esther Dyson
Cracking down on rogue websites

Question. Ms. Dyson, do you believe that the increase in top level domains combined with all the requirements ICANN is putting in place will make its easier, more difficult, or not change the ability of U.S. authorities to crack down on Internet sites--to use the phrase--that are dedicated to infringing activity?

Answer. I believe that the increase in volume is likely to make the task more difficult and reduce the US's ability to effectively stop illegal activity because it will be easier to create and exploit new websites . . . and consumers are likely to be even more confused than now when they try to figure out what's legitimate and what's not.

Unfortunately, ICANN does not have a very good record of properly enforcing its own requirements, so I'm not inclined to believe its promises as the opportunities for abuse proliferate.

Response to Written Questions Submitted by Hon. Olympia J. Snowe to
Esther Dyson
United Nations Model

Question 1. There has been a growing contingency of other countries critical of the ICANN multi-stakeholder model and about the US' involvement and influence with ICANN. Some governments, not necessarily friendly to the U.S., are seeking to increase their power over the Internet and its governance.

Russia and China (with Tajikistan and Uzbekistan) have proposed to the United Nations an Internet "Code of Conduct," which a senior State Department official stated "they seek to justify the establishment of sovereign government control over Internet resources and over freedom of expression in order to maintain the security of their state."¹ Even Russian Prime Minister Vladimir Putin remarked recently his desire of "establishing international control over the Internet using the monitoring and supervisory capabilities of the International Telecommunication Union (ITU)."²

\1\ http://www.huffingtonpost.com/2011/09/27/russia-china-internet-control_n_984223.html.

\2\ <http://premier.gov.ru/eng/events/news/15601/>.

The other proposal by India, Brazil and South Africa calls for the creation of a new body within the United Nations to oversee Internet policy. As a result, ICANN as well as the Internet Governance Forum (IGF) could be significantly marginalized or hijacked by this new UN entity.

These proposals seem to be in direct conflict with our Nation's effort to privatize the Internet through transferring the authority of the DNS to the private sector and for the Internet governance model to be private-sector led.

If the U.S. Government followed the advice to unilaterally delay the gTLD expansion, what do you believe the impact would be globally and do you believe this would fan the flames of anti-U.S. government sentiment with respect to Internet governance? Could it give more momentum to other governments' calls to have the United Nations assert oversight over ICANN or replace it altogether?

Answer. Basically, it is up to ICANN itself whether to delay the gTLD expansion. If they do it the right way--genuinely soliciting input from all over the world--then I think that would in fact reduce other governments' standing to take over ICANN. It needs to reach out beyond governments and domain-name interests to see whether the public itself wants new domain names. . .and make sure its board represents those diverse interests.

Question 2. If the U.N. did take control or governments had greater involvement, what impact would that have on American businesses and citizens that utilize the Internet? What impact could it have on Freedom of Speech?

Answer. It's hard to predict exactly, but I think it would be likely to reduce freedom of speech and freedom of association in general.

Growth of the Internet and expansion of the domain name system

Question 3. The Internet has been so amazingly beneficial to small businesses because it allows them to globally expand their local markets and enables them to compete with Fortune 100 companies because the size of the computer screen is the same for a small business in Bangor as it is for a multi-national corporation like Wall-mart. Small businesses are the anchor to not only Maine's economy but to our Nation's and the Internet has been invaluable to them.

Supporters of the expansion have stated it will bring new competition and choice to the Internet space and allow the Internet to continue to grow in the number of websites, content, applications, and online services. It also presents businesses new models to harness the boundless benefits of the Internet.

There have already been expansions to top level domains in the past to accommodate for the growth of the Internet, with the intro of gTLDs like .biz, .info, .museum, .mobi, etc.

Given that there have already been two expansions of top level domains, it seems difficult to simply state that there shouldn't be any additional top-level domains for the Internet. The Internet is all about expansion and innovation, after all. Are you really saying we already have all the top-level domains the Internet will ever need?

Answer. In extremis, any new name you can dream up--such as

ANYNAME--can either be represented as ANYNAME.com or it's redundant to an existing ANYNAME.com. If you actually look at most of what's in the new TLDs, you will find huge amounts of redundancy and conflicts. Most companies I talk to register their names in .com, .net, .org and a variety of other TLDs. . . . So, again, it's redundancy rather than expansion.

And meanwhile, any new business model can work with the existing domain name system. . . . Such as all the names that come after the slash as in twitter.com/edyson.

Question 4. If the Internet is going to continue to grow shouldn't the domain name system?

Answer. It can expand within the current structure. The shortage is not of domain names; it's of space in people's heads to remember all the names.

Question 5. Putting aside your request for delay, are there specific improvements you would recommend in the gTLD program that would address your concerns?

Answer. The obvious answer is stronger upfront protection for trademarks, but all this will come at tremendous legal cost with very few benefits. And of course, more attention to the legal protections suggested by CRIDO and actual enforcement of ICANN's requirements. And finally, a change in who is represented on ICANN's board and other decision-making bodies.

White Paper

Question 6. In the "White Paper," which was released in 1998 and led to the formation of ICANN is competition, has as one of its core principles is competition--that competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.

Comments in the White Paper^{\3\} on the issue of new generic top level domains showed "very strong support for limiting government involvement during the transition period on the matter of adding new gTLDs. Specifically, most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." Also, commenters noted that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution."

^{\3\} <http://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses>.

Isn't the expansion of gTLD a form of competition, where .hotels or .cars could compete against .com or .biz? If not, why?

Answer. In theory it is, but in practice it is more a way of eroding the value of existing names.

Question 7. As stated the white paper highlighted that "most commenters--both U.S. and non-U.S.--suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running." What has happened since the inception of ICANN that warrants the United States Government from ignoring these initially comments from U.S. and non-U.S. stakeholders that ICANN should decide the issue of new gTLDs?

Answer. Yes, I do think it's appropriate for ICANN to make these decisions, but they should consider the public interest more thoroughly when they do so. As it is, the major benefits will go to insiders--people in the business of selling and managing domain names--rather than to the owners or users of the names.

Question 8. Several commenters also stated "the market will decide which TLDs succeed and which do not." What is wrong with allowing the market to continue to decide with new gTLDs from the expansion?

Answer. In principle, there's nothing wrong with this . . . but the domain-name market seems stacked to the benefit of insiders. The reality is that there is no competition for ICANN itself. That's not necessarily a problem, but it means that ICANN and the entities that control it should be held to a high standard of accountability to the public interest.

Question 9. If commenters are correct that "there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution" then why should we place "artificial or arbitrary" limits on the Internet?

Answer. Because the benefits of the expansion go to third parties rather than to the participants. De facto, ICANN and its stakeholders

are creating dilutive property rights out of thin air and then auctioning many of them to the highest bidders.

Name.Space, inc.
New York, NY

Thank you this opportunity to present the views of Name.Space and its board of directors to the Committee on Commerce's hearing on ICANN and the expansion of Top Level Domains.

I am Paul Garrin, the founder of Name.Space, a first mover in the Internet Top Level Domain registry field, working to bring our original generic TLDs to market since 1996, predating ICANN by two years.

Name.Space recognizes the concerns of intellectual property holders, and we believe that we have a constructive and workable solution for policy and practice that will satisfy all parties, and welcome this opportunity to present our views to the Committee on Commerce at this December 8, 2011 hearing.

This testimony is intended to serve the Committee members and parties concerned about the positive impact of new generic Top Level Domains by raising awareness of our position and vision for a constructive approach to bringing generic Top Level Domains to market in a way that protects intellectual property owners, and creates new opportunities for branding, consumer choice and confidence, and free expression.

Historically, the commercialization of the Domain Name System has been plagued with ill-will. Cyber-squatting, domain name speculation, and fraud cost legitimate publishers, content creators, and brand owners millions of dollars in settling disputes, paying inflated prices from domain auctioneers and speculators, and in defensive domain name registrations. There are many conditions that led to this cascade of malfeasance resulting in defensive actions, un-budgeted costs, and damages to intellectual property and brand owners, and consumers. Foremost, is the lack of competition in the commercial TLD registry space. The incumbent registries, through their aggressive practices have done nothing but fuel the feeding frenzy on unmitigated domain name speculation in order to maximize their profits without regard to the negative consequences against brand owners and the overall utility of the DNS. ICANN's own policies only partially address brand protection through the (optional) sunrise period that precedes the launch of a new gTLD to the general public, and the trademark and brand clearing house.

Name.Space, in its year 2000 application to ICANN, presented its policy and business practices that we believe are the most equitable in protecting the interests of intellectual property and brand owners, and free speech. Our business model is based not on exuberance over a particular string, but on a balanced portfolio of gTLDs that represents opportunities to create strong new brands, essential for new businesses and products, as well as for less popular community, cultural, and free expression purposes. Our model establishes an economy of scale that supports both commercially valuable gTLDs, and less-profitable gTLDs that serve smaller communities, and free expression, at a stable and affordable price point.

In the upcoming 2012 gTLD round, Name.Space will re-assert its policies and responsible business practices for the fair delegation of domain names under its gTLDs, as well as work with IP interests and ICANN to develop new methods that better serve the proactive and preemptive protections necessary for the protection of intellectual property and brands in all of the gTLDs that we own and operate.

Some of Name.Space's IP protections include:

- (1) Registered trademark name clearing house and preemptive famous names filter.
- (2) Sunrise period reserved for registered brands and intellectual property at a fixed wholesale cost.
- (3) Whois ``lockout" that prevents registered brands from becoming available to the general public.
- (4) Wholesale registrar access with volume discounts to associations who serve intellectual property constituents.
- (5) Full cooperation with organizations such as the ANA, IPO, WIPO, INTA, MPAA, and others to develop technologies, policies, and business practices for operating our gTLDs that protect existing brands, and develop new opportunities to use gTLDs to create strong new brands, and to present owners with innovative ways to protect and serve their content online.

(6) Restrictions on registering domain names for the sole purpose of resale.

Name.Space had applied for 118 of its original generic Top Level Domains (including such gTLDs as .ART, .BOOKS, .MUSIC, .NOW, .SHOP, .SPACE, .SUCKS) in the first gTLD round held by ICANN in 2000. Although our application was accepted under ICANN's rules, and selected in the top 10 picks of "strong candidates", it was not advanced toward delegation, and thus remains pending. Our year 2000 ICANN application had the support of then Chair Esther Dyson, who stated that Name.Space represents diversity, free speech, and is likely to be a successful business that supports both commerce and free expression.

Name.Space, whose business has a potential value of over 1 billion dollars, has been deprived the opportunity to fully launch and operate its portfolio of gTLD properties under what we believe is the most responsible, fair, and ethical practices yet to be employed in the commercial domain name industry. ICANN's approval of Name.Space's gTLDs will increase competition and diversity in the TLD registry space, and assure that our exemplary practices will best serve the public by providing the new gTLDs and the opportunities they present for new brands, small businesses, individual publishers and content creators, and for all owners of content libraries and new services in all media. The Internet is evolving and new gTLDs are an essential part of Internet infrastructure, and its evolution.

The 2012 ICANN round is the first opportunity for gTLD selection since 2000, and we have very patiently been waiting for this time to arrive so that our business can reach its full potential. We don't believe that our responsible and ethical approach to operating our gTLDs will harm intellectual property and brand owners, but will in fact protect them and offer new opportunities. Any further delay in launching our business will do nothing but cause further distress to my struggling business, and prevent us from creating jobs and contributing to the economy. We ask that there be no delay in the ICANN 2012 gTLD round, and that ICANN honor our year 2000 application for the portfolio of gTLDs that Name.Space originated since

1996, operated in commerce, and that we reserve our rights to. Name.Space is committed to the principles and practices stated here, and we believe that our gTLD policies are fair and exemplary, and welcome the cooperation of ICANN and the intellectual property associations to work with us in the most constructive and reasonable way so that our gTLDs become available on the global Internet without further delay.

I look forward to questions from the members of this committee, and to the beginning of a constructive dialogue with constituencies affected by the introduction of new gTLDs to the global Internet.

Sincerely,

Paul Garrin,
Founder,
Name.Space.

Appendix:

Name.Space has testimony on the record from hearings held by both Senate and House Commerce Committees on the subject of Top Level Domains submitted between 1997-2001. Name.Space is an early advocate of the shared registry system, and an advocate of a neutral non-profit organization to oversee the framework for introducing new gTLDs to the Internet, and was a participant in the IFWP process from which ICANN emerged.

Brief history:

1996--Name.Space launched real time domain name registry service publishing its original generic TLDs
1997--March 11, Name.Space requested Network Solutions add our gTLD data to the global root.zone file.
1997--March 12, Network Solutions refuses to add our gTLDs to root.zone
1997--March 20, Name.Space files antitrust suit against Network Solutions in Federal Court, Southern District NY
1997--September 25 House Commerce Committee hearing on Internet Domains Pt 1 (Name.Space testimony on record)
1997--September 30 House Commerce Committee hearing on Internet Domains Pt 2 (Name.Space testimony on record)
1997--National Science Foundation joined to lawsuit on First Amendment grounds
1998--Commerce Dept. NTIA releases "Green Paper" (Name.Space comments on record)
1998--Commerce Dept. NTIA releases "White Paper" (Name.Space comments on record)
1998--Commerce Dept. NTIA IFWP process (Name.Space participates)
1998--NTIA takes over contract between NSF and NSI, and amends it (amendment 11)

1998--Commerce Dept. NTIA contracts Internet Corporation for Assigned Names and Numbers

1999--NTIA creates separation of TLD ``registry" (wholesale) and domain name ``registrar" (retail) using shared registry system. Prices drop from \$100 per 2 year registration to \$30 per year.

1999--ICANN accredits 30 companies to serve as domain name registrars (reselling .COM); Name.Space accredited

2000--February, Second Circuit Court of Appeals decision--immunity for Network Solutions

2000--November--Name.Space participates in ICANN gTLD round, submits 118 gTLDs, pays \$50,000 application fee; is picked in top 10 strong applicants; support from chair Esther Dyson, opposed by other board members; application unresolved, still pending. *several ICANN board members recused themselves in connection with TLD applications that were selected.

2001--February 8 House Commerce Committee ICANN hearing (Name.Space testimony on record)

2001--February 14 Senate Commerce Committee ICANN hearing (Name.Space testimony on record)

2000--Present--Name.Space business severely impacted by non-global access for its gTLDs, struggles to stay afloat. New investment enables us to participate in the 2012 round with our standing application from 2000.

Links to view video from ICANN's 2000 gTLD round:

Paul Garrin presents Name.Space to ICANN board, answers board's questions (Nov. 15, 2000): <http://replace.tv/vid/2000-icann1115-pg-presents.mov> (approx. 8 min.)

ICANN board (sans recused members) discusses the Name.Space gTLD application: <http://replace.tv/vid/2000-icann1116-pt02-ns-discussion.mov> (approx. 28 min.)

For more information, history, press highlights links, please see:

<http://about.namespace.org>.

Select press links:

<http://www.nytimes.com/library/cyber/week/032297domain.html>
(Name.Space formerly known as PGP Media) <http://timeto.freethe.net/pg/media/washpost>
19970706.txt

<http://news.cnet.com/2100-1023-203408.html> (Name.Space formerly known as PG Media)

<http://timeto.freethe.net/pg/media/dot-monopoly1.jpg> <http://timeto.freethe.net/pg/media/dot-monopoly2.jpg>

<http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2000/12/03/BU113071.DTL>

http://www.thevillager.com/villager_314/thebattleofnyc.html

Attachments:

- (1) Name.Space ICANN application from the 2000 gTLD round
 - (2) Questions and answers from ICANN to Name.Space on the 2000 application
 - (3) Name.Space business plan (2000 version as submitted to ICANN)
- [Attachments not inserted into the record.]

ICANN
14 December 2011

At-Large Advisory Committee

Att:

Hon. John D. (Jay) Rockefeller IV,
Chairman, Senate Committee on Commerce, Science, and Transportation
United States Senate,
Washington, DC.

Dear Chairman Rockefeller,

We are following up on the discussions which took place during the 8 December 2011 hearing of the United States Senate Committee on Commerce, Science and Transportation about ICANN's expansion of generic Top Level Domains.

As current chairs of ICANN's At-Large Advisory Committee (ALAC) and North American Regional At-Large Organization (NARALO), we found Ms. Esther Dyson's description of the ALAC circa 2003 extremely out-of-date. Her testimony depicted the ALAC prior to the establishment of the five Regional At-Large Organizations (RALOs) which are designed to provide a structured input first to the ALAC and then to ICANN from Internet end-users around the world. However, we fully support her overall message for the public to pay attention to the workings of

ICANN, and that ICANN's door is open.

Today, the ALAC is able to comment on any aspect of the new gTLD program, which it has on several occasions, as well as any other program or process at ICANN. It carries much more "weight" within ICANN's multi-stakeholder, bottom-up model, than it had in the past, thanks to the hard, relentless work of many end-user volunteers who are fighting in the "trenches" to bring the public interest to the ICANN table. We have nearly 140 At-Large Structures (acronym ALS--any formal commercial or non commercial organization having established a process to collect member input at a country level, whether a local non-profit computer club, or a charity bringing computing to the disadvantaged) worldwide and are increasing our membership on a monthly basis.

We believe it is the duty of ICANN, and of the ALAC, to impress upon legislators and the Executive Branch in all countries that the touchstone of future Internet development is, and should remain, in the public interest. In parallel, we wish to draw the attention of legislators in the United States to the fact that, because their conclusions and choices regarding the Internet have the potential to affect Internet end-users elsewhere, United States' initiatives and laws should seek to be compatible with the public interest internationally.

Active At-Large members cannot purport to "represent" the 2.1 billion global Internet users, but they can try to act in what they honestly believe is in the best interests of the Internet's end users. Do we have enough members? Probably not--our aim is to have at least one At-Large Structure (ALS) in every country around the world. We need more volunteers. We need more input from global Internet end-users.

The vehicle for this input is here. It is already used and has produced dozens of statements every year, which you and your honorable colleagues can consult on: <http://www.atlarge.icann.org/correspondence>

However, this vehicle needs to be more advertised. We are doing our part to raise awareness of ALAC and the issues of interest to global Internet end-users.

We ask that you share the information of this vehicle as outlined above with your colleagues.

Yours sincerely,

Beau Brendler, Chair,
North American Regional At-Large Organization (NARALO),
<http://www.naralo.org/> Yonkers, New York.
Dr. Olivier MJ Crepin-Leblond, Chair,
At-Large Advisory Committee,
<http://www.alac.icann.org/> London, UK.

Council of Better Business Bureaus, Inc.
December 8, 2011

Hon. Jay Rockefeller IV,
Hon. Kay Bailey Hutchinson,
Committee on Commerce, Science, and Transportation,
United States Senate,
Washington, DC.

Dear Chairman Rockefeller and Senator Hutchinson:

The Council of Better Business Bureaus (CBBB) would like to thank you for holding a hearing on the important topic of Internet domain expansion.

CBBB concurs with the concerns expressed by the Association of National Advertisers and the nonprofit constituency of the Internet Corporation for Assigned Names and Numbers (ICANN). Currently, there is insufficient control over the rampant crime that takes place via the Internet in the form of pirating of intellectual property, identity theft, phishing scams and other types of brand infringement and consumer fraud. CBBB and its constituents--small and medium business, nonprofits and consumers--are victimized by Internet crime on a daily basis.

Before ICANN undertakes a mass expansion of potential websites, it needs to come up with a workable solution, in conjunction with international crime fighting organizations and victims of crime, to improve the ability of law enforcement to track and shut down illicit activities on currently registered Internet websites.

As a not-for-profit trade association with famous and well-recognized trademarks, CBBB has to devote considerable resources to tracking and taking action against illicit use of its trademarks on the Internet. We also have to spend scarce financial resources each year purchasing domain names in all of the different top level domains corresponding to all of our trademarks and programs to keep illegitimate users from purchasing our name and diverting traffic to their fraudulent websites. An increase in the top level domains will

exponentially increase these costs.

ICANN's current proposal requires trademark holders to register their trademarks in a Trademark Clearinghouse and then purchase or block each trademark in each new top level domain (an expense that most non-profits and small businesses cannot afford). Instead of the current proposal, ICANN should block the new TLD registries from selling domains that belong to trademark holders and have been properly registered in the Trademark Clearinghouse.

As an example of the backward manner in which ICANN "protects" trademarks, it is notable to consider the experience the CBBB had in the most recently opened top level domain, the .xxx TLD operated by ICM Registry for the adult entertainment industry. Any trademark holder that wanted to ensure that its trademark was not sold in that registry had to block it during the "sunrise" period. Otherwise, ICM could sell the trademark as domain names, a common practice. In all, ICM and the registrars selling to .xxx made approximately \$23 million from this type of defensive registration by trademark holders who simply wanted to protect their good names from abuse.

Even more astounding was the fact that ICM Registry refused to accept CBBB's registration of its most famous trademark ("BBB," one of the most recognized trademarks in North America) because ICANN allowed ICM to reserved bbb.xxx as a premium name that it can later auction off to the highest bidder.

Another type of Internet crime and organizational identity theft occurred just yesterday when the BBB network e-mail and registered torch logo were used as tools in a widespread phishing scam that sent e-mails to thousands of people across North America and victimized unsuspecting e-mail recipients who believed these e-mails came from BBB. Despite best efforts, long hours and wasted resources, it is difficult to identify the perpetrators of phishing scams such as this.

ICANN was authorized to operate the domain naming and addressing system under the condition that it act in the public interest, per the terms of its Memorandum of Understanding with the Department of Commerce and its subsequent Affirmation of Commitments. To fulfill this public interest requirement, ICANN must balance the desire for greater competition on the Internet with suitable protections for legitimate organizations and hard working business owners. That is essential to fulfilling its public interest commitment.

Without more controls on Internet registries and registrars, the Internet will increasingly serve criminal interests over the public interest. More resources must be made available to combatting Internet crime. We recommend that these strong actions be taken before ICANN expands top level domains, an expansion that will only exacerbate these grave problems.

The Council of Better Business Bureaus and our entire BBB network appreciate the work of the Committee in helping solve these issues that impact large and small companies, nonprofits, charities and, ultimately, consumers.

Sincerely,

Stephen A. Cox,
President and CEO,
Council of Better Business Bureaus, Inc.

Dell, Inc.
Washington, DC, December 7, 2011

Senator Jay Rockefeller IV,
Chairman
Committee on Commerce, Science, and Transportation
Washington, DC.
Senator Kay Bailey Hutchison,
Ranking Member
Committee on Commerce, Science, and Transportation
Washington, DC.

Dear Chairman Rockefeller and Ranking Member Hutchison:

Thank you for committing your and the Committee's time and resources toward exploring the implications of the International Corporation for Assigned Names and Numbers' (ICANN) generic top-level domain (gTLD) expansion plan. This proposal is of great concern to Dell and our many online customers.

As a company that transacts significant business online, Dell is already a major target of online criminals who fraudulently incorporate our trademark into domain names in attempts to steal individuals' private information, sell dangerous counterfeit products, or otherwise defraud consumers. Dell expends significant resources, in the form of litigation and defensive domain name procurement, to counter these

threats to consumer welfare in the existing universe of domain names. ICANN's plan to multiply the size of that universe will both multiply the expenses required to undertake those defenses, as well as multiply the potential online threats to consumers. We believe that the inevitable result of ICANN's current plan will be erosion of consumer trust in ecommerce, along with significant new expenses on all honest companies that transact business online--expenses that are particularly undesirable during a time when our economy needs companies to invest instead in innovation and job creation.

ICANN's multi-stakeholder process did not adequately address the concerns of stakeholders in the domain name system, and Dell believes it imperative for the U.S. Government to now take steps to ensure that ICANN fulfills its obligations to resolve these serious issues. We respectfully request that you and your colleagues encourage the Department of Commerce to ask ICANN, under the Affirmation of Commitments Agreement, to delay implementation to fully review and work to resolve stakeholder concerns, particularly those that threaten the consumer trust that currently enables ecommerce to thrive.

Respectfully,

Rebecca MJ Gould,
Vice President,
Global Government Relations
and Public Policy.

Prepared Statement of Jim Gibbons, President and CEO,
Goodwill Industries International, Inc.

Mr. Chairman, Ranking Member, and members of the Committee, on behalf of Goodwill Industries International, Inc., I appreciate this opportunity to submit written testimony on the Internet Corporation for Assigned Names and Numbers (ICANN) expansion of new generic top level domains (new gTLD program).

Goodwill Industries is comprised of 165 independent, community-based Goodwill agencies in the United States and Canada and 14 international affiliates. Collectively, Goodwill's network of local agencies provides employment training, job placement services and other community services to nearly 2.5 million people annually. In addition, 170,000 people obtain meaningful employment as a result of Goodwill career services programs. These employees earn \$2.7 billion in salaries and wages and contribute to their communities as productive, taxpaying citizens.

Goodwill Industries is one of the early organizational members of the Not-for-Profit Operational Concerns Constituency (NPOC). After several years of discussing the new gTLD program, the ICANN board identified the nonprofit sector as an under-represented voice within the ICANN community and Internet governance, thus appointing a new councilor to represent and promote the needs of nonprofits in the fall of 2009. In June, 2010 the nonprofit voice had increased sufficiently and warranted the formation of a new constituency. NPOC was formally approved by the ICANN board on June 24, 2011. Unfortunately by the time the nonprofit sector was recognized and able to raise valid concerns, the proposed guidelines for the new gTLD program has undergone many revisions. NPOC currently represents 23 nonprofits from around the world, 11 of which are based in the United States including the YMCA. Many other applications are pending membership, demonstrating the increased interest by nonprofits of this issue. Goodwill Industries supports the testimony provided by Angela Williams, General Counsel, YMCA of the USA on behalf of her agency and NPOC.

As a member of NPOC and one of the five most valuable and recognized nonprofit brands as well as a leading social services enterprise, Goodwill Industries has several concerns with the new gTLD program, including: budgetary concerns; the increased risks of fraud, cybersquatting, and trademark infringement; and public confusion.

Budgetary Concerns

The ultimate cost in proceeding through the entire process of applying for a gTLD could reach several hundred thousand dollars. The initial application cost is to be approximately \$185,000 plus an additional annual cost thereafter of at least \$25,000 for a required ten-year term. This does not include the legal fees required to prepare the application and certain amounts required to be in escrow. Furthermore, additional costs can be incurred if an applicant is required to defend the application. For example, if ICANN requires an extended evaluation of an application, the applicant may have to pay an additional \$50,000 including fees to defend the application which range from \$1,000 to \$5,000 in filing fees per party per proceeding, and an additional \$3,000 to \$20,000 in costs per proceeding, which must be paid up front.

Should Goodwill choose not to participate in the new gTLD program, there is a great risk that another entity will apply for the use of the

name "goodwill" or one that is similar--such as a misspelling of the word "goodwill". In the likely event that another entity applies for a top-level domain that contains "goodwill", the costs for filing an objection are expected to be \$30,000 to \$50,000.

As a nonprofit social enterprise committed to its mission of eliminating barriers to opportunity and helping people in need reach their fullest potential through the power of work, Goodwill Industries and its local members simply do not have the resources to participate in the new gTLD and will certainly not be able to compete against for-profit organizations with resources and reserves available for intellectual property protection. In these tough economic times when faced with decreased donations and increases in the number of people seeking services, Goodwill and other nonprofits must continue to use funds to provide critical services to our communities. Goodwill simply cannot afford thousands of dollars to become a domain name registry solely to ensure brand protection. Becoming a domain name registry is not part of Goodwill's mission, yet protection of its reputation and brand is critical. Founded in 1902, Goodwill has a long history and a solid reputation with the millions of shoppers, donors, and people who use our services. Last year Goodwill earned the trust of 74 million donors and provided job-training and employment services to nearly 2.5 million people.

Risk of Fraud and Public Confusion

The primary enforcement mechanism of the new gTLD program is the Trademark Clearinghouse where registered trademark owners can protect their registered trademark rights. Many of the costs of listing marks in the Trademark Clearinghouse are still unclear, creating uncertainty as to whether this is a viable option for nonprofits to protect their brands.

The Trademark Clearinghouse will only apply to exact matches of trademarks, rather than common misspellings, etc. that fraudsters and cybersquatters often use to deceive and confuse Internet users attempting to locate a particular nonprofit. Nonprofits are not in a position to register their marks using hundreds of additional gTLDs, particularly at premium prices.

Bad actors such as fraudsters and cybersquatters who register and use domain names in bad faith to take advantage of the established trust between nonprofits and the public and the brand reputation of other well-known entities have existed for many years. Goodwill Industries recently learned of an unauthorized entity using its name to fundraise online and in a local community. Potential funders were confused about which organization was seeking donations and for what purpose. Unfortunately this is a common occurrence as trademark infringement is becoming more rampant.

The likely increased public confusion and fraud that will occur in the new gTLD space will be particularly devastating for nonprofits. If nonprofits, including Goodwill and our members, are not able to adequately protect names and trademarks, bad-faith domain name registrants will be able to inappropriately profit from hundreds of domain names that are identical or similar. In addition, those bad actors may disseminate dangerously false information to Internet users, greatly increasing the likelihood that the public will be misled.

Conclusion

Goodwill Industries believes ICANN should eliminate the costs--or at a minimum, drastically reduce the costs--for verified nonprofits to participate in the new gTLD program. Furthermore, verified nonprofit trademarks should be exempt from the new gTLD program at little-to-no cost and mechanisms for trademark protection within the new gTLD program should be significantly strengthened.

Goodwill is an innovative social enterprise and as such has expanded its presence on the Internet and increased its mobile accessibility to meet the needs of its shoppers, donors, and program participants. The zip code locator is the most popular feature of www.goodwill.org where one can find the nearest Goodwill to shop, donate, volunteer, and/or receive job-training and employment services. Like many nonprofits, Goodwill is also increasing its online fundraising capacity. As Goodwill continues to see growth in these areas, protecting our brand, reputation, and the nonprofit sector as a whole is more important than ever. However, these protections should not come at the expense of the critical services that nonprofits provide.

Thank you for taking the time to consider these consequences of the new gTLD program. We look forward to continuing our work with ICANN via our participation in NPOC to ensure the voice of the nonprofit sector and the people we serve is heard.

Hon. John D. Rockefeller IV,
Chair,
Committee on Commerce, Science, and Transportation,
United States Senate,
Washington, DC.

Dear Senator Rockefeller:

Easter Seals is pleased to endorse the testimony of the Not-for-Profit Operational Concerns Constituency (NPOC) before the United States Senate Committee on Commerce, Science, & Transportation on the issue of the Internet Corporation for Assigned Names and Numbers' (ICANN) new Generic Top-Level Domain Name Program (new gTLD Program)..

Easter Seals, like many non-profit organizations, increasingly relies on the Internet for communicating and fulfilling our mission to provide services and supports to people with disabilities and other special needs. The potential for cybersquatting and fraud could be greatly increased under the gTLD Program and groups like Easter Seals would need to divert greatly needed resources away from services to protect ourselves. We believe that the new gTLD Program, as currently defined, will ultimately create unintended, and costly, consequences for not-for-profit organizations.

Thank you for your consideration.

Sincerely,

Jennifer Dexter,
Assistant Vice President,
Government Relations.

Prepared Statement of the National Restaurant Association

The National Restaurant Association appreciates the opportunity to register the U.S. restaurant industry's strong opposition to the January 2012 roll-out of the new generic top-level domain (gTLD) program approved by the Internet Corporation for Assigned Names and Numbers (ICANN) in June 2011.

The Association is the leading business association for the restaurant and foodservice industry. Our industry is comprised of 960,000 restaurant and foodservice locations. These nearly 1 million restaurant locations serve more than 130 million Americans every day. Our members include multi-state, multi-unit restaurant brands with thousands of locations worldwide and small independent businesses with a single location.

The restaurant industry plays a significant role in our Nation's economy. Restaurants will generate an estimated \$604 billion in sales this year, with an overall economic impact of more than \$1.7 trillion. The restaurant industry is one of the Nation's largest private-sector job creators, employing about 12.8 million people, representing nearly 10 percent of the U.S. workforce.

The Association joins more than 100 other major business associations and companies in the Coalition for Responsible Internet Domain Oversight (CRIDO) in urging the Department of Commerce to stop or delay ICANN's new gTLD program. We were part of CRIDO's petition to U.S. Department of Commerce Secretary John Bryson in November urging the Department to work with ICANN on delaying and reconsidering the program.

We believe ICANN's gTLD program would impose billions of dollars in unnecessary costs on the restaurant industry at a time when restaurant operators are looking forward to investing in their businesses and hiring employees after the worst recession in decades. Profit margins in restaurants are notoriously slim, with restaurants averaging about 4 percent in pre-tax profits on every dollar in sales. The ICANN program will divert scarce restaurant resources away from job creating, business-building activities. These are dollars far better spent reinvesting in our businesses.

If ICANN proceeds as planned, the organization will start accepting applications next month for hundreds and ultimately thousands of new top-level domains. Restaurants of all sizes will be forced to apply for new domains to protect their brands and trademarks. Costs include a \$185,000 application fee for each new top-level domain. Restaurants and other companies also likely would be forced to register numerous second-level domains--the words to the left of the "dot" in Internet addresses--within the new top-level domains. Costs would be driven higher by legal, marketing and other costs. Some businesses have put the cost of registering a single top level domain at \$2 million or more over the initial 10-year contract as companies submit applications, watch and defend their domains, monitor for infringement and litigate to block abuse. Costs could run higher if businesses are forced to buy their own Internet names in auctions.

The Internet is increasingly central to restaurateurs' efforts to

attract guests and grow their businesses. This is true for both major restaurant brands and independent restaurants. Association research shows that Americans increasingly go online for information about restaurant menus, specials, nutrition facts and more. Restaurants rely on the Internet to reach guests. Our members would have little choice but to apply for domain names for both commercial and defensive reasons. For our largest restaurant-member brands, the price tag is exorbitant. For the hundreds of thousands of smaller restaurant operators who depend on the Internet to communicate with guests, the costs and confusion could be insurmountable.

Even beyond the financial toll the gTLD program will exact on millions of U.S. businesses, the Association believes that ICANN's program will confuse consumers by spreading Internet searches across hundreds or even thousands of new top-level domains. As confusion grows, each domain name becomes less valuable. This could undermine consumer trust in the system and make it harder for the Internet to serve as the efficient conduit for business activity that it does today.

The U.S. government has delegated powers to ICANN to govern the domain-name process. ICANN is responsible for ensuring its actions further the public interest and promote consumer trust. ICANN says it has built consensus on its recommendations; indeed, its contract with the Department of Commerce requires this consensus. Yet the Association believes ICANN has failed to justify the need for the potentially explosive expansion in top-level domains or to get consensus from the millions of business stakeholders who will be affected by the program.

Finally, we believe ICANN has taken only minimal steps to educate and inform the business community and consumers about the new top-level domain process. If ICANN proceeds with the January roll-out of its gTLD program, businesses and non-profit organizations will be immediately affected. Yet even given the reaction of the business and non-profit communities to the ICANN program, there has been little education and information to help businesses and consumers understand the scope of what is about to happen. Millions of American business owners know nothing about the gTLD expansion. Information has filtered out slowly and sporadically since ICANN approved the program in June, leaving businesses and consumers in the dark about one of the biggest shake-ups in Internet marketing in decades.

The Association asks Congress and the Commerce Department to urge a reassessment of the gTLD program before its planned roll-out in January. We thank the Committee for holding this hearing to air the serious concerns of America's business community with ICANN's domain name expansion program.

Prepared Statement of Josh Bourne, President,
Coalition Against Domain Name Abuse (CADNA)

Chairman Rockefeller, Senator Klobuchar and distinguished members of the Committee, thank you for convening this hearing on the Internet Corporation for Assigned Names and Numbers (ICANN) and its program to expand the number of new generic top-level domains (gTLDs) in the domain name space. This is a drastic change that ICANN is about to implement. It will dramatically impact the space, and given the commercial significance of the Internet, it is critical that the United States Congress involve itself in matters of domain name space policy and regulation.

My name is Josh Bourne and I am the president of the Coalition Against Domain Name Abuse (CADNA). Over four years ago with the help of leading brand owners we founded CADNA, a 501(c)(6) non-profit association, to combat a variety of abuses on the Internet. CADNA represents businesses vital to the American and global economies from a wide range of commercial industries including financial services, manufacturing, pharmaceutical, leisure, high technology, and manufacturing. Our members include companies such as: Dell, DIRECTV, Lilly, Hewlett-Packard, Hilton, HSBC, LEGO, Marriott, Nationwide, New York Life Wells Fargo, and Wyndham.

CADNA was founded in response to the growing international problem of cybersquatting, which is the bad faith registration of domain names that include or are confusingly similar to existing trademarks. In addition to the mounting legal costs that companies now face in defense of their own trademarks in the domain space, this infringement costs organizations billions of dollars in lost or misdirected revenue. CADNA works to decrease instances of cybersquatting in all forms by facilitating dialogue, effecting change, and spurring action on the part of policymakers in the national and international arenas. CADNA also aims to build awareness about illegal and unethical infringement of brands and trademarks online. In the four years since its inception, CADNA has generated valuable new intelligence to help inform and expertly guide its members and increase awareness of CADNA's mission.

CADNA seeks to make the Internet a safer and less confusing place for consumers and businesses alike.

Thank you very much for the opportunity to present the views of our organization on this very important topic.

CADNA looks at the way that the New gTLD Program was developed as the product of a flawed system. CADNA believes that the goal of fostering innovation and competition through the expansion of the domain name space is not inherently objectionable, but rather, that the policy development process that ICANN conducted created a problematic program.

Since ICANN's June 20 decision to approve the Applicant Guidebook, CADNA has continued to promote changes in ICANN to improve governance, policy making, and to increase transparency. In addition, we have looked to find ways to ensure that ICANN follows through on its commitments with respect to the implementation of the gTLD policy and to develop recommendations that may improve the policy going forward.

CADNA's aim is to be a constructive partner in the Internet governance process. We have always supported ICANN's multi stakeholder system and strongly believe that, with some reforms, ICANN can better fulfill its designated mission. Our research efforts and conversations with hundreds of potential participants in the application process have resulted in several recommendations. I will be the first to admit that they need further development, but CADNA believes that they can serve as the basis of further dialogue with the Internet community and ICANN.

Here are some concrete steps that can be taken to immediately improve the implementation of the gTLD policy:

A declaration by ICANN of when the next applicant round will take place would relieve much of the anxiety surrounding the first round. CADNA has found that businesses feel forced into applying for new gTLDs in the first round, lest they be put at a disadvantage relative to their competitors who may gain an edge by acquiring their own new gTLDs.

Businesses are worried about dealing with the cybersquatting that will occur to the "left of the dot" in the new space--in other words, they are worried about the defensive registrations that they will need to pay for in others' new gTLDs and the infringing domains that ultimately get registered by cybersquatters. To alleviate this issue, ICANN should require registries to give brand owners the option to buy a block on their trademark before any registration period (sunrise or land-rush) opens. This can be offered at a lower cost than sunrise registrations have been priced at in the past--this precedent has been set with the blocks offered in .XXX, where the blocks are made in perpetuity for one, non-recurring fee.

If ICANN is awarded a renewed IANA contract, the National Telecommunications and Information Administration (NTIA) should renew the IANA contract for one year. In this one year, there should be an evaluation of whether ICANN followed through on its commitments with regard to the gTLD process and any extension of the contract should be contingent on conducting internal reforms to improve governance and transparency.

As the process moves forward, CADNA believes there will be many more improvements that can be made. In the coming months, CADNA intends to monitor progress and to research and develop other recommendations.

Mr. Chairman, you have been an outspoken leader on Internet issues and on Internet governance. The exponential expansion of the Internet created by ICANN's gTLD policy holds tremendous opportunities for innovation and for improving the lives of many. At the same time, the new policy creates many challenges in regard to the enforcement of individual rights, intellectual property protection, and consumer fraud.

CADNA would like to seize this opportunity with you and your Committee, the Obama Administration, and other private and public partners to develop an ICANN policy making process that will not repeat the mistakes of this gTLD policy, but one that will produce policies that will improve the Internet experience for all Internet users.

Hon. John D. Rockefeller IV,
Chairman,
Commerce, Science, and Transportation Committee,
United States Senate,
Washington, DC.

Hon. Kay Bailey Hutchinson,

Ranking Member,
Commerce, Science, and Transportation Committee,
United States Senate,
Washington, DC.

Dear Chairman Rockefeller and Ranking Member Hutchinson:

In response to the December 8 hearing regarding new generic top-level domains (gTLDs), we write to register our concern with the mischaracterization of elements of the gTLD program, and to communicate our support for new gTLDs.

The organizations signing this letter believe the introduction of new gTLDs will be innovative and economically beneficial, that the Internet Corporation for Assigned Names and Numbers (ICANN) has conducted an inclusive and well-handled review of the program, and that preparations for gTLD introduction are sufficient to ensure Internet security and stability and to protect rights holders.

ICANN, along with multiple relevant stakeholders and policy organizations, including the Generic Names Supporting Organization, undertook a very lengthy, comprehensive and transparent process that led to the approaching application for and introduction of new gTLDs. Since the formation of the multi-stakeholder Internet governance, no process has been as inclusive, and no level of outreach has been as far-reaching as the one facilitating discussion of namespace expansion. ICANN, its stakeholders, the intellectual property community, and governments are to be applauded for actively seeking, welcoming and incorporating the input of so many.

As undeniably inclusive as this process has been, however, we believe it is even more important to recognize the significant social and economic opportunities new gTLDs will provide, particularly in a fragile global economy. Since ICANN's establishment in 1998, a key element of its mandate has been not only to ensure the secure and stable operation of a global domain name system, but to promote the competition and consumer choice that contributes to global economic growth. Established and developing economies are anticipating the new opportunities afforded by new gTLDs and it is noteworthy that this expansion will include internationalized domain names (IDNs), TLDs that permit Internet users, for the first time, to access domain names in their native languages and character sets.

Innovation and expansion into new areas of technology always bring questions and concerns—further development of the namespace is no exception. Since ICANN's inception in 1998, it has successfully managed careful generic namespace expansion while addressing the well-known concerns of many, including cybersecurity experts, government representatives, intellectual property rights holders, and others. Since the process for the current round of expansion was introduced in 2005, more than six years ago, all interested stakeholders took unprecedented steps—well in advance—that provide further protections against infringement, damage or harm to national interests. More than a dozen open-to-the-public global meetings, nearly fifty public comment periods, a dedicated meeting between the ICANN Board and its Governmental Advisory Committee, and the exchange and discussion of tens of thousands of documents confirm that the decision in favor of new gTLDs can't be logically characterized as sudden.

These painstaking deliberations have involved some of us more than others. However, we each equally respect and support the efforts and the intentions of ICANN in this beneficial endeavor. We are confident the evaluation process for applicants, including the stringent attention to DNS stability and security, will allow for a safe and productive new gTLD introduction.

While new gTLDs will experience different levels of end-user adoption, we optimistically anticipate the useful possibilities for new services and applications from the namespace, the positive economic impact in the United States and globally, the inclusion of developing nations in Internet growth and development, and the realization of the hard work and preparation of the thousands of interested stakeholders dedicated not only to their own interests, but that of the global Internet.

Sincerely:

Alexa Raad, Chief Executive Officer, Architelos
Alexander Siffrin, Chief Executive Officer, Key Systems GmbH
Andreas Schreiner, Chief Executive Officer, InterNetWire Communications GmbH
Angie D. Graves, President, WEB Group, Inc.
Antony Van Couvering, Chief Executive Officer, Minds + Machines
Bhavin Turakhia, Chief Executive Officer and Founder, Directi
Bret Fauset, President and Founder, Internet Pro APC
Clyde Beattie, Principal, The Yorkland Group
Dr. Liz Williams, Chief Executive Officer, Sedari

Elliot Ness, Chief Executive Officer, Tucows
John Styli, Chief Operating Officer, Far Further
Jonathon Nevett, President, Domain Dimensions, LLC
Kevin Saimon, President, Urban Brain
Krista Papac, Chief Strategy Officer, ARI Registry Services
Loren Salman, Chief Executive Officer, Far Further
Mason Cole, Principal, 5x5 Communications
Michael Berkens, Director, RightOfTheDot LLC
Mike Rodenbaugh, Founder, Rodenbaugh Law
Monte Cahn, President/Director, RightOfTheDot LLC
Nacho Amadoz, Legal & Policy Director, Fundacio PuntCAT
Paul Stahura, Chief Executive Officer, Donuts Inc.
Richard Wilhelm, Principal, RJW Partners, LLC
Robert Connelly, President, Domains Only
Robin Gross, Executive Director, IP Justice
Steve Miholovich, Sr. Vice President Sales & Marketing, Safenames Ltd.
Susan Prosser, Vice President, Marketing, Domain Tools
Tad Yokoyama, President, Interlink Co., Ltd.
William Mushkin, Chief Executive Officer and Founder, Name.com

cc: Members of the Commerce, Science and Transportation Committee

EXHIBIT JZ-3

VeriSign (VRSN US)

Underweight

Price: \$112.97
09 Jan 2018

DoJ Clears Way for VRSN to Close .web Purchase

This morning, the company announced that the DOJ investigation into VeriSign acquiring .web has been closed, a positive development for VeriSign. This clears the path for Nu Dot Co to finish the registration process with ICANN and transfer ownership over to VeriSign. Recall VeriSign is paying \$135M for the ownership rights to be the registry operator of .web. This could offer a new growth opportunity for the company into the future, but just as important, we think it is a very good defensive strategic move keeping .web out of the hands of the potential competitor as we believe .web could be the closest thing to .com in the minds of customers looking for domain names. Still, the overall domain name industry is seeing name growth in the mid-single digits so the incremental growth opportunity will benefit VeriSign, but is unlikely to drive revenue growth back into the double digits. The bigger revenue growth opportunity will be if the cooperative agreement with the Department of Commerce is allowed to expire at the end of November freeing up VeriSign to renegotiate the .com contract with ICANN to get pricing power back.

- **DoJ closes investigation on .web.** VRSN had received a Civil Investigation Demand from the Antitrust Division of the DoJ in January 2017 seeking information and documents concerning .web TLD. Today in an 8-K filing, VRSN said that DoJ has closed the investigation. This sets the ball rolling for Nu Dot Co to execute the .web Registry Agreement and assign it to VRSN thereafter upon consent with ICAAN.
- **Acquisition of .web had set a new high in top-level domain pricing.** In July 2016, Nu Dot Co bought the rights of .web TLD, backed by VRSN, from ICAAN at a record high price of \$135M. The largest deal before that was the acquisition of .CO by Neustar. Given VeriSign's high cash balance and .web's potential brand value, we think the acquisition makes sense.

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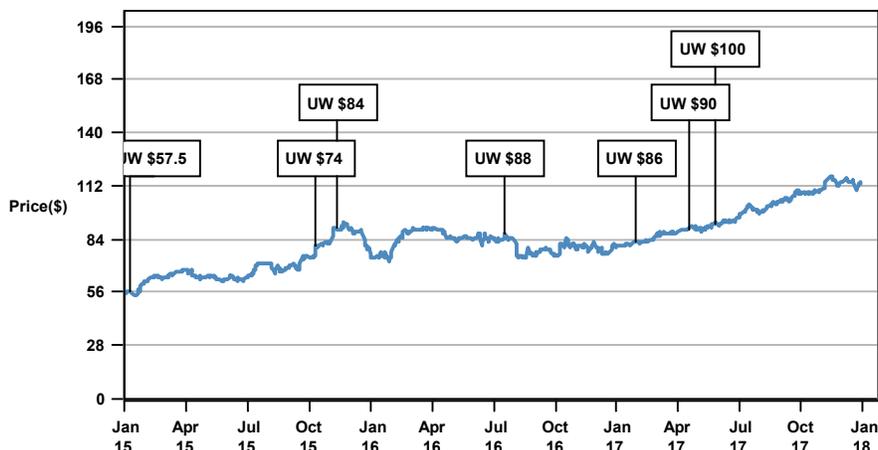
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VeriSign (VRSN, VRSN US) Price Chart



Date	Rating	Share Price (\$)	Price Target (\$)
22-Jan-15	UW	56.37	57.50
23-Oct-15	UW	80.18	74.00
23-Nov-15	UW	90.18	84.00
29-Jul-16	UW	86.61	88.00
09-Feb-17	UW	83.14	86.00
28-Apr-17	UW	88.92	90.00
06-Jun-17	UW	92.52	100.00

Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends. Initiated coverage Jun 21, 2000.

The chart(s) show J.P. Morgan's continuing coverage of the stocks; the current analysts may or may not have covered it over the entire period.

J.P. Morgan ratings or designations: OW = Overweight, N= Neutral, UW = Underweight, NR = Not Rated

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J.P. Morgan Equity Research Ratings Distribution, as of January 02, 2018

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage	45%	43%	12%
IB clients*	53%	50%	35%
JPMS Equity Research Coverage	44%	46%	10%
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EXHIBIT JZ-4

POLICY —

Any lawful device: Revisiting Carterfone on the eve of the Net Neutrality vote

From the archives: An old FCC decision provides perspective for what the Commission is doing now.

MATTHEW LASAR - 12/13/2017, 2:49 PM



[Enlarge](#) / Ever hear of this classic tech?

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As tomorrow's FCC net neutrality vote looms, Ars has been sharing as much of [our reporting](#) on the topic as possible. And this week, a longtime reader nudged us about this classic on the FCC's Carterfone decision from nearly 50 years ago. "This story is extremely relevant to the current Net Neutrality debate in that it provides a historical precedent to debunk arguments about regulation stifling innovation," the reader writes. "It shows that this battle is not a recent development, but goes back decades. Might you consider republishing it so that this story can get new exposure?"

Ask nicely (and offer a great suggestion), and you shall receive. This story originally ran in June 2008. Below, it appears unchanged except for updates to the time frame (the piece originally ran on the decision's 40th anniversary).

Nearly 50 years ago, the Federal Communications Commission issued one of the most important [Orders](#) in its history, a ruling that went unnoticed by most news sources at the time. It involved an application manufactured and distributed by one Mr. Thomas Carter of Texas. The "Carterfone" allowed users to attach a two-way radio transmitter/receiver to their telephone, extending its reach across sprawling Texas oil fields where managers and supervisors needed to stay in touch. Between 1955 and 1966, Carter's company sold about 3,500 of these apps around the United States and well beyond.

In the end, however, *Carterfone's* significance extends far beyond the convenience that Thomas Carter's machine provided its users over a decade. It is no exaggeration to say that the world that Ars Technica writes about was created, in good part, by the legal battle between Carter, AT&T, and the FCC's resolution of that fight—its *Carterfone* decision. The Carterfone saga starts as the appealing tale of one developer's willingness to stick to his guns. But it is really about the victory of two indispensable values: creativity and sharing.

Neither just nor reasonable

The dominant telephone company in the United States fiercely opposed Carterfone. AT&T and the last surviving independent telco, the southwest's General Telephone, told their customers that they should not use the attachment because it was a "prohibited interconnecting device." To be fair, that was true, legally speaking. Americans bought the vast majority of telephone equipment from AT&T's Western Electric company because they had to, specifically because of FCC Tariff Number 132: "No equipment, apparatus, circuit or device not furnished by the telephone company shall be attached to or connected with the facilities furnished by the telephone company, whether physically, by induction or otherwise."

Thomas Carter thought that this was bunk. He took AT&T and General Telephone to federal court, arguing that their warnings to consumers represented a violation of the Sherman Anti-Trust Act. In 1966 the United States Court of Appeals for the Fifth Circuit agreed that they would decide the suit—but not before the FCC reconsidered Tariff Number 132. The agency then appointed an investigator to look into the matter.

AT&T may have thought it had an ally in the FCC circa 1966, but that was no longer the case. The Commission had been chastened by an earlier controversy over a device called the *Hush-A-Phone*. This ridiculous proceeding involved AT&T's objection to a small plastic receiver snap-on which allowed business phone talkers to chat more quietly. The FCC took an astounding seven years to thoughtlessly back Ma Bell on the issue, only to see its decision slapped silly by an appellate court. "To say that a telephone subscriber may produce the result in question by cupping his hand and speaking into it, but may not do so by using a device which leaves his hand free to write or do whatever else he wishes, is neither just nor reasonable," the bemused judges [observed](#) in 1956.



Models for Hand-set Phone



Models for Pedestal Phone

A Telephone Silencer - the HUSH-A-PHONE

A solution of three phone problems of subscribers

Safeguarding Privacy: So others cannot hear confidential matters
Eliminating Phone Talk Annoyance: Quietening the office for personnel efficiency
Improving Hearing in Noisy Places: By keeping surrounding noises out of the transmitter
 Write for Booklet T-E.

Hush-A-Phone Corporation, 43 W. 16th St., N. Y. City

Behold, an ad for the *Hush-A-Phone*. In a proceeding, AT&T's objected to its small plastic receiver snap-on which allowed business phone talkers to chat more quietly. The FCC took seven years before backing Ma Bell on the issue.

Now the best that AT&T's clever lawyers could do was convince the FCC to let them write a new policy with a codicil allowing for non-electric applications like Hush-A-Phone. But the phone giant still insisted that Carterfone posed a danger.

It was June 26, 1968 when the FCC acted on Carterfone. Robert F. Kennedy had been buried two weeks earlier. In Czechoslovakia, followers of the "Prague Spring" fought against Communist rule. Students revolted against mindless

bureaucracies at Columbia University, in Paris, in Seoul, in Mexico City. In these stormy times almost no one noticed as the FCC's Commissioners quietly rebelled against the world's biggest telco, unleashing the future.

JUMP TO END PAGE 1 OF 2

Unlawful in the past

Before explaining the FCC's *Carterfone* decision, it should be noted that the historic ruling should not have been necessary. AT&T should never have been allowed to own Western Electric in the first place. President Harry Truman's Attorney General tried to undo this monopolistic wrong in the late 1940s. But, as the telecommunications historian Gerald Brock notes, during the early Cold War AT&T pleaded for anti-trust relief in the interest of national security. Its endlessly ingenious attorneys argued that a full fledged anti-trust decree would disrupt the corporation's management of Sandia atomic weapons Labs—this at the height of the Korean War.

And so in 1956, the corporate-dominated Eisenhower administration settled for a "Consent Decree" with AT&T. The deal "enjoined and restrained" the phone giant and its subsidiaries from doing anything except providing common carrier service or, in the case of Western, manufacturing components for anything besides common carrier service. In other words, the AT&T monopoly had been contained, to borrow the old Cold War phrase, but still wielded overwhelming power over the nation's telecommunications system. Two years after the consent decree, Thomas Carter began selling his Carterfone machines.



Ma Bell factored into FCC thinking a long time ago, too.

When the FCC finally ruled on Carterfone, the agency said that it had considered five questions. Did the public need Carterfone? What impact did it have on the ability to the telephone system to provide interstate service? Did Tariff 132 correctly apply to the device? Should it? Or, if not, what action should the Commission take now?

To questions one and two, the FCC delivered clear and decisive answers. The public indeed benefited from the application. It did not harm the publicly switched telephone system. But the agency went much further than simply giving Carterfone a waiver. This time the FCC ruled that although Carterfone did violate Tariff 132, that was not the attachments' fault.

"We hold," ruled the Commission, "that application of the tariff to bar the Carterfone in the future would be unreasonable and unduly discriminatory. However... we also conclude that the tariff has been unreasonable, discriminatory, and unlawful in the past, and that the provisions prohibiting the use of customer-provided interconnecting devices should accordingly be stricken."

AT&T fought on. Its lawyers tried to get state utility commissions to override *Carterfone* within state boundaries, but the FCC insisted that the policy overruled state regulators. The telco insisted that companies could only exercise their newly won *Carterfone* rights if the applications that they developed connected to the network via an AT&T approved linking device. Eventually the agency declared these plug-ins unnecessary. For a while AT&T tried to charge a fee for using the non-AT&T telephones that consumers could now use thanks to *Carterfone*. But as Brock points out, most customers "simply plugged them in and ignored the notice that the local telephone company should be notified before using the telephone."

Within a few years of the FCC's *Carterfone* decision, America had become a motley world of funny receivers, slick switch boxes, and rickety answering machines.

More importantly, consumers quickly embraced the "modulate/demodulate" device, otherwise known as the telephone modem. A 1999 FCC [policy paper](#) noted the significance and justly gave the agency credit for the proliferation of this application. "The Carterfone decision enabled consumers to purchase modems from countless sources," the agency concluded. "Without easy and inexpensive consumer access to modems, the Internet would not have become the global medium that it is today."

Carterfone's progress

Take a look at the FCC's best rulings, and there you will find *Carterfone*. You will find it, for example, in the agency's 1998 decision to let consumers pick and choose their own cable set top boxes. "Subscribers have the right to attach any compatible navigation device to a multichannel video programming system," the Commission declared. "We conclude that the core requirement, to make possible the commercial availability of equipment to MVPD subscribers, is similar to the *Carterfone* principle adopted by the Commission in the telephone environment."

Carterfone is inherent in the FCC's 700Mhz auction [Block C](#) concept, with its requirement that consumers can connect any broadband device to that portion of the mobile phone spectrum. *Carterfone* is basic to the [proposal](#) that a merged XM/Sirius must let developers build any kind of receiver linking to the new broadcaster, including receivers that also play mp3 files and connect to the Internet.



Enlarge / After the FCC's *Carterfone* decision, America became a motley world of funny receivers, slick switch boxes, and rickety answering machines.

But a good idea doesn't enforce itself. If Skype's [petition to the FCC](#) asking the agency to apply *Carterfone* principles to the mobile Internet prevails, it will be because hundreds of thousands of citizen/consumers have made it clear to the government that it must. It is not acceptable, as Skype argues, for the big telcos to use their influence over handset design "to maintain control over and limit subscribers rights to run software communications applications of their choosing." But it won't actually *be* unacceptable unless consumers exercise enough control over the regulatory process to make it so.

In the end, *Carterfone* says that it is our telecommunications system, not AT&T, Verizon, and Comcast's. We finance the system with our subscription, application, and investment money. We support it with utility easements, regulatory breaks, and government contracts paid for by our taxes. We make it work because we are its workers. We make it exciting with our innovations, technical and social, big and small.

We do not begrudge the CEOs of these great corporations their legal positions. But they are, as Andrew Carnegie would put it, stewards of the system, not its owners. They are not there to tell us to Go Away. They are there to keep the system running while we discover it, use it, develop it, innovate it, game it, finesse it, and reinvent it to our heart's content. The great enterprise of telecommunications is no better than our right to participate in it as individuals.

That is the meaning of *Carterfone*. Ars Technica wishes all our subscribers and readers a happy June 26th. Happy *Carterfone* Day.

Further reading

- Gerald R. Brock, *The Telecommunications Industry: The Dynamics of Market Structure*
- Kevin G. Wilson, *Deregulating Telecommunications: U.S. and Canadian Telecommunications, 1840-1997*
- "Carterfone Changes Our World," [Communications News](#), 1984



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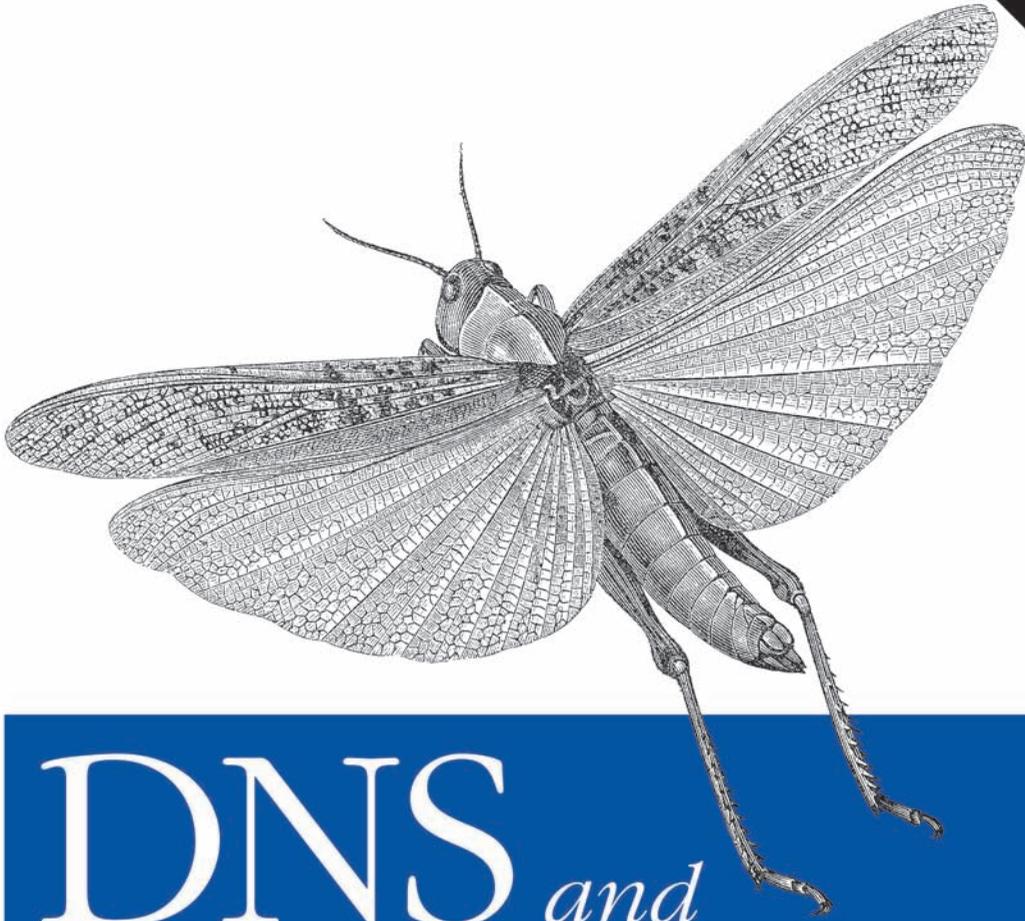
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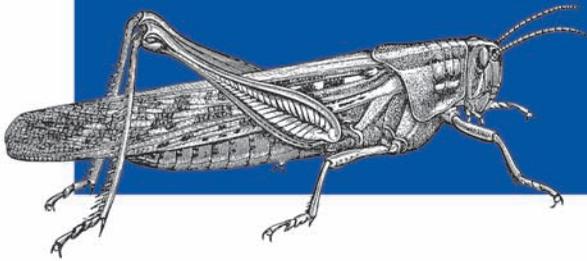
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Background

*The White Rabbit put on his spectacles. “Where shall I begin, please your Majesty?” he asked.
“Begin at the beginning,” the King said, very gravely,
“and go on till you come to the end: then stop.”*

It’s important to know a little ARPAnet history to understand the Domain Name System (DNS). DNS was developed to address particular problems on the ARPAnet, and the Internet—a descendant of the ARPAnet—is still its main user.

If you’ve been using the Internet for years, you can probably skip this chapter. If you haven’t, we hope it’ll give you enough background to understand what motivated the development of DNS.

A (Very) Brief History of the Internet

In the late 1960s, the U.S. Department of Defense’s Advanced Research Projects Agency, ARPA (later DARPA), began funding the *ARPAnet*, an experimental wide area computer network that connected important research organizations in the United States. The original goal of the ARPAnet was to allow government contractors to share expensive or scarce computing resources. From the beginning, however, users of the ARPAnet also used the network for collaboration. This collaboration ranged from sharing files and software and exchanging electronic mail—now commonplace—to joint development and research using shared remote computers.

The Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite was developed in the early 1980s and quickly became the standard host-networking protocol on the ARPAnet. The inclusion of the protocol suite in the University of California at Berkeley’s popular BSD Unix operating system was instrumental in democratizing internetworking. BSD Unix was virtually free to universities. This meant that internetworking—and ARPAnet connectivity—were suddenly available cheaply to many more organizations than were previously attached to the ARPAnet.

Many of the computers being connected to the ARPAnet were being connected to local area networks (LANs), too, and very shortly the other computers on the LANs were communicating via the ARPAnet as well.

The network grew from a handful of hosts to tens of thousands of hosts. The original ARPAnet became the backbone of a confederation of local and regional networks based on TCP/IP, called the *Internet*.

In 1988, however, DARPA decided the experiment was over. The Department of Defense began dismantling the ARPAnet. Another network, the NSFNET, funded by the National Science Foundation, replaced the ARPAnet as the backbone of the Internet.

In the spring of 1995, the Internet made a transition from using the publicly funded NSFNET as a backbone to using multiple commercial backbones, run by telecommunications companies such as SBC and Sprint, and long-time commercial internet-working players such as MFS and UUNET.

Today, the Internet connects millions of hosts around the world. In fact, a significant proportion of the non-PC computers in the world are connected to the Internet. Some commercial backbones carry a volume of several gigabits per second, tens of thousands of times the bandwidth of the original ARPAnet. Tens of millions of people use the network for communication and collaboration daily.

On the Internet and Internets

A word on “the Internet,” and on “internets” in general, is in order. In print, the difference between the two seems slight: one is always capitalized, one isn’t. The distinction between their meanings, however, *is* significant. The Internet, with a capital “I,” refers to the network that began its life as the ARPAnet and continues today as, roughly, the confederation of all TCP/IP networks directly or indirectly connected to commercial U.S. backbones. Seen up close, it’s actually quite a few different networks—commercial TCP/IP backbones, corporate and U.S. government TCP/IP networks, and TCP/IP networks in other countries—interconnected by high-speed digital circuits. A lowercase internet, on the other hand, is simply any network made up of multiple smaller networks using the same internetworking protocols. An internet (little “i”) isn’t necessarily connected to the Internet (big “I”), nor does it necessarily use TCP/IP as its internetworking protocol. There are isolated corporate internets, for example.

An *intranet*, with a little i, is really just a TCP/IP-based internet, used to emphasize the use of technologies developed and introduced on the Internet on a company’s internal corporate network. An *extranet*, on the other hand, is a TCP/IP-based internet that connects partner companies, or a company to its distributors, suppliers, and customers.

The History of the Domain Name System

Through the 1970s, the ARPAnet was a small, friendly community of a few hundred hosts. A single file, *HOSTS.TXT*, contained a name-to-address mapping for every host connected to the ARPAnet. The familiar Unix host table, */etc/hosts*, was compiled from *HOSTS.TXT* (mostly by deleting fields Unix didn't use).

HOSTS.TXT was maintained by SRI's *Network Information Center* (dubbed "the NIC") and distributed from a single host, SRI-NIC.* ARPAnet administrators typically emailed their changes to the NIC, and periodically FTP'ed to SRI-NIC and grabbed the current *HOSTS.TXT* file. Their changes were compiled into a new *HOSTS.TXT* file once or twice a week. As the ARPAnet grew, however, this scheme became unworkable. The size of *HOSTS.TXT* grew in proportion to the growth in the number of ARPAnet hosts. Moreover, the traffic generated by the update process increased even faster: every additional host meant not only another line in *HOSTS.TXT*, but potentially another host updating from SRI-NIC.

When the ARPAnet moved to TCP/IP, the population of the network exploded. Now there was a host of problems with *HOSTS.TXT* (no pun intended):

Traffic and load

The toll on SRI-NIC, in terms of the network traffic and processor load involved in distributing the file, was becoming unbearable.

Name collisions

No two hosts in *HOSTS.TXT* could have the same name. However, while the NIC could assign addresses in a way that guaranteed uniqueness, it had no authority over hostnames. There was nothing to prevent someone from adding a host with a conflicting name and breaking the whole scheme. Adding a host with the same name as a major mail hub, for example, could disrupt mail service to much of the ARPAnet.

Consistency

Maintaining consistency of the file across an expanding network became harder and harder. By the time a new *HOSTS.TXT* file could reach the farthest shores of the enlarged ARPAnet, a host across the network may have changed addresses or a new host may have sprung up.

The essential problem was that the *HOSTS.TXT* mechanism didn't scale well. Ironically, the success of the ARPAnet as an experiment led to the failure and obsolescence of *HOSTS.TXT*.

The ARPAnet's governing bodies chartered an investigation to develop a successor for *HOSTS.TXT*. Their goal was to create a system that solved the problems inherent in a

* SRI is the former Stanford Research Institute in Menlo Park, California. SRI conducts research into many different areas, including computer networking.

unified host-table system. The new system should allow local administration of data yet make that data globally available. The decentralization of administration would eliminate the single-host bottleneck and relieve the traffic problem. And local management would make the task of keeping data up-to-date much easier. The new system should use a hierarchical namespace to name hosts. This would ensure the uniqueness of names.

Paul Mockapetris, then of USC's Information Sciences Institute, was responsible for designing the architecture of the new system. In 1984, he released RFCs 882 and 883, which described the Domain Name System. These RFCs were superseded by RFCs 1034 and 1035, the current specifications of the Domain Name System.* RFCs 1034 and 1035 have since been augmented by many other RFCs, which describe potential DNS security problems, implementation problems, administrative gotchas, mechanisms for dynamically updating nameservers and for securing zone data, and more.

The Domain Name System, in a Nutshell

The Domain Name System is a distributed database. This structure allows local control of the segments of the overall database, yet data in each segment is available across the entire network through a client/server scheme. Robustness and adequate performance are achieved through replication and caching.

Programs called *nameservers* constitute the server half of DNS's client/server mechanism. Nameservers contain information about some segments of the database and make that information available to clients, called *resolvers*. Resolvers are often just library routines that create queries and send them across a network to a nameserver.

The structure of the DNS database, shown in Figure 1-1, is similar to the structure of the Unix filesystem. The whole database (or filesystem) is pictured as an inverted tree, with the root node at the top. Each node in the tree has a text label, which identifies the node relative to its parent. This is roughly analogous to a "relative pathname" in a filesystem, like *bin*. One label—the null label, or ""—is reserved for the root node. In text, the root node is written as a single dot (.). In the Unix filesystem, the root is written as a slash (/).

Each node is also the root of a new subtree of the overall tree. Each of these subtrees represents a partition of the overall database—a *directory* in the Unix filesystem, or a *domain* in the Domain Name System. Each domain or directory can be further divided into additional partitions, called *subdomains* in DNS, like a filesystem's subdirectories. Subdomains, like subdirectories, are drawn as children of their parent domains.

* RFCs are Request for Comments documents, part of the relatively informal procedure for introducing new technology on the Internet. RFCs are usually freely distributed and contain fairly technical descriptions of the technology, often intended for implementors.

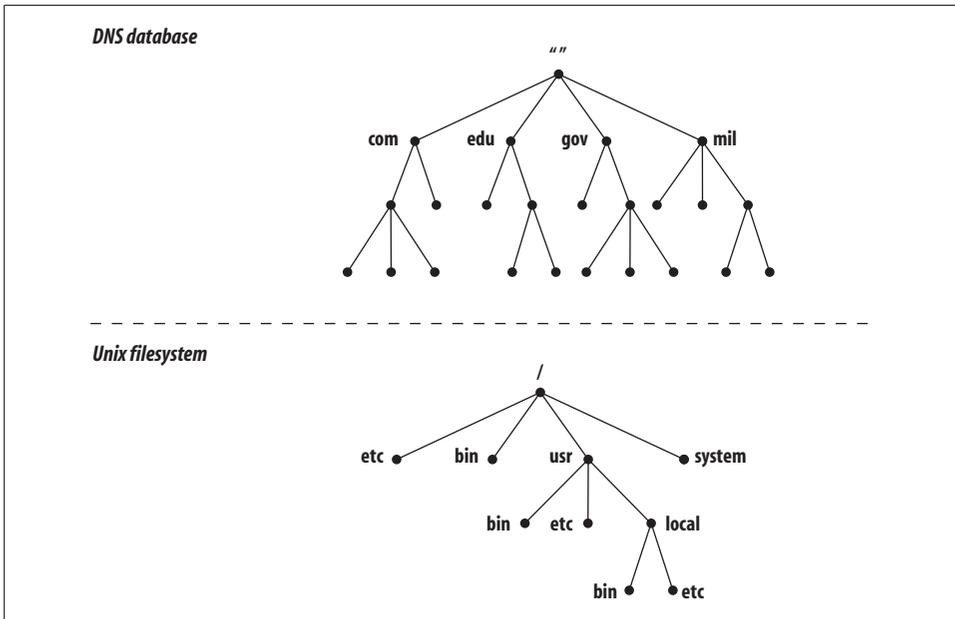


Figure 1-1. The DNS database versus a Unix filesystem

Every domain has a unique name, like every directory. A domain's *domain name* identifies its position in the database, much as a directory's *absolute pathname* specifies its place in the filesystem. In DNS, the domain name is the sequence of labels from the node at the root of the domain to the root of the whole tree, with dots (.) separating the labels. In the Unix filesystem, a directory's absolute pathname is the list of relative names read from root to leaf (the opposite direction from DNS, as shown in Figure 1-2), using a slash to separate the names.

In DNS, each domain can be broken into a number of subdomains, and responsibility for those subdomains can be doled out to different organizations. For example, an organization called EDUCAUSE manages the *edu* (educational) domain but delegates responsibility for the *berkeley.edu* subdomain to U.C. Berkeley (Figure 1-3). This is similar to remotely mounting a filesystem: certain directories in a filesystem may actually be filesystems on other hosts, mounted from remote hosts. The administrator on host *winken*, for example (again, Figure 1-3), is responsible for the filesystem that appears on the local host as the directory */usr/nfs/winken*.

Delegating authority for *berkeley.edu* to U.C. Berkeley creates a new *zone*, an autonomously administered piece of the namespace. The zone *berkeley.edu* is now independent from *edu* and contains all domain names that end in *berkeley.edu*. The zone *edu*, on the other hand, contains only domain names that end in *edu* but aren't in delegated zones such as *berkeley.edu*. *berkeley.edu* may be further divided into subdomains, such as *cs.berkeley.edu*, and some of these subdomains may themselves be

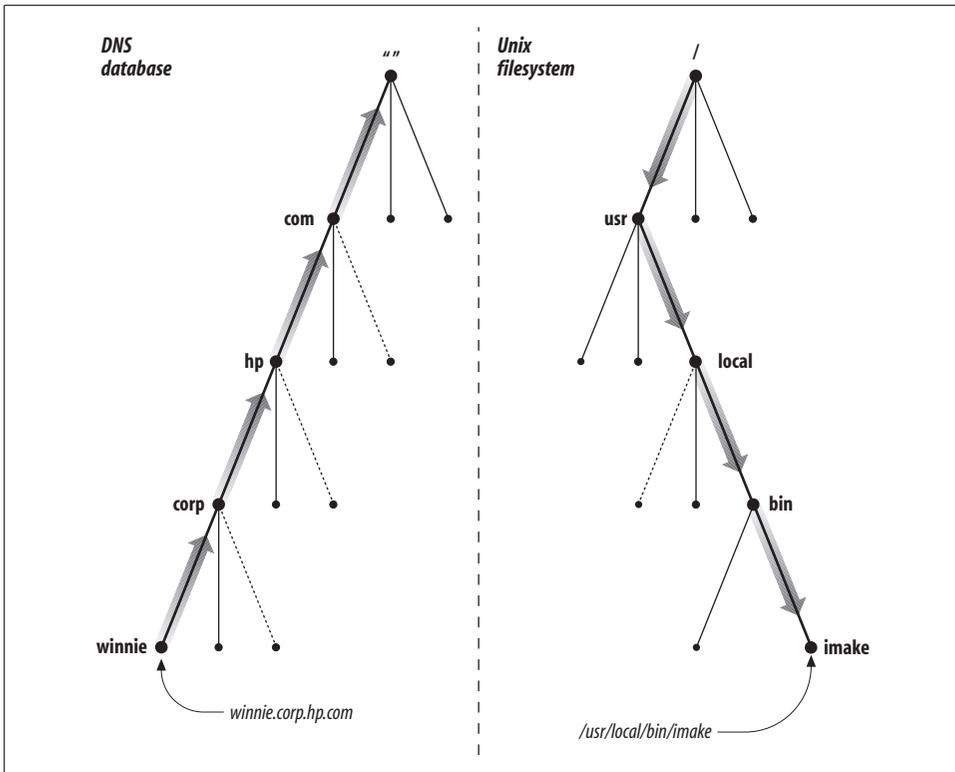


Figure 1-2. Reading names in a DNS database and in a Unix filesystem

separate zones, if the *berkeley.edu* administrators delegate responsibility for them to other organizations. If *cs.berkeley.edu* is a separate zone, the *berkeley.edu* zone doesn't contain domain names that end in *cs.berkeley.edu* (Figure 1-4).

Domain names are used as indexes into the DNS database. You might think of data in DNS as “attached” to a domain name. In a filesystem, directories contain files and subdirectories. Likewise, domains can contain both hosts and subdomains. A domain contains those hosts and subdomains whose domain names are within the domain's subtree of the namespace.

Each host on a network has a domain name, which points to information about the host (see Figure 1-5). This information may include IP addresses, information about mail routing, etc. Hosts may also have one or more *domain name aliases*, which are simply pointers from one domain name (the alias) to another (the official, or *canonical*, domain name). In Figure 1-5, *mailhub.nv...* is an alias for the canonical name *rincon.ba.ca...*

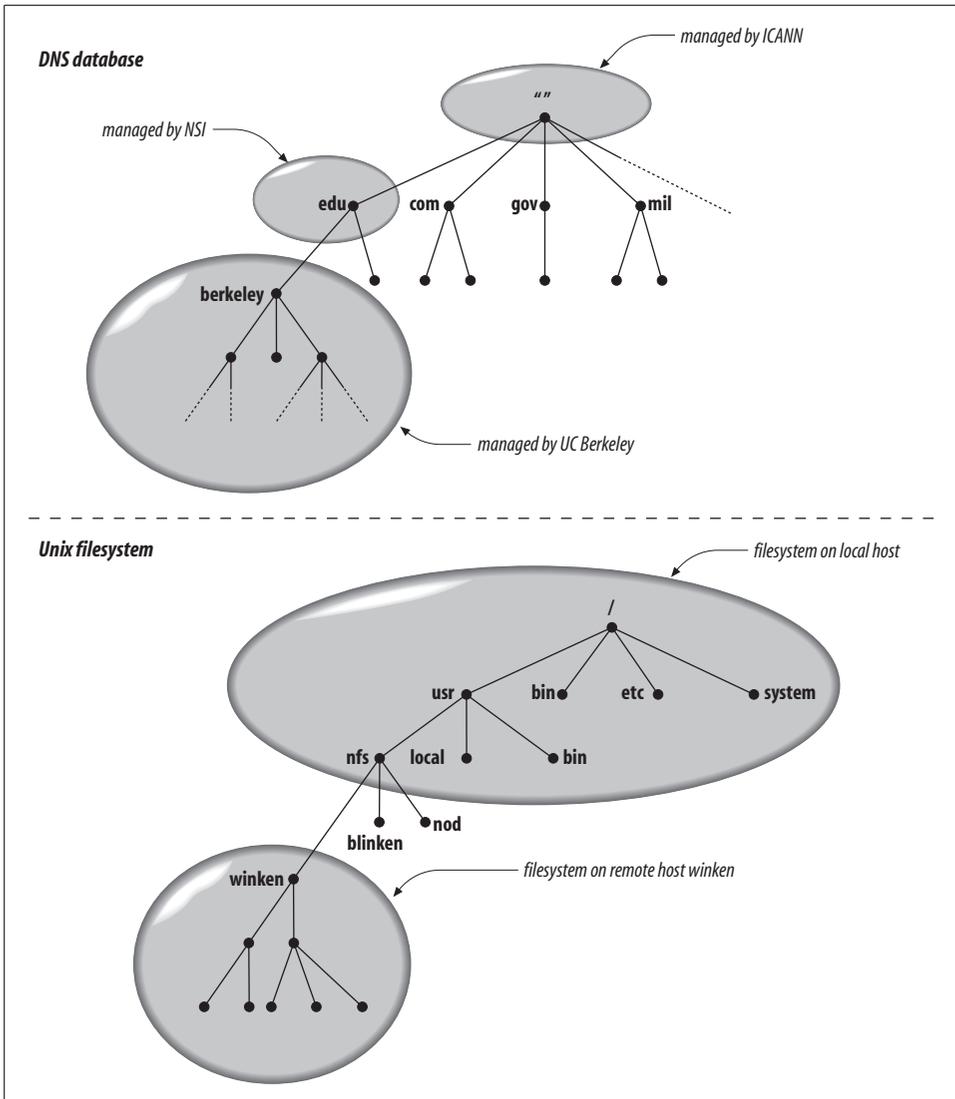


Figure 1-3. Remote management of subdomains and of filesystems

Why all the complicated structure? To solve the problems that *HOSTS.TXT* had. For example, making domain names hierarchical eliminates the pitfall of name collisions. Each domain has a unique domain name, so the organization that runs the domain is free to name hosts and subdomains within its domain. Whatever name they choose for a host or subdomain won't conflict with other organizations' domain names because it will end in their unique domain name. For example, the organization that runs *hic.com* can name a host *puella* (as shown in Figure 1-6) because it knows that the host's domain name will end in *hic.com*, a unique domain name.

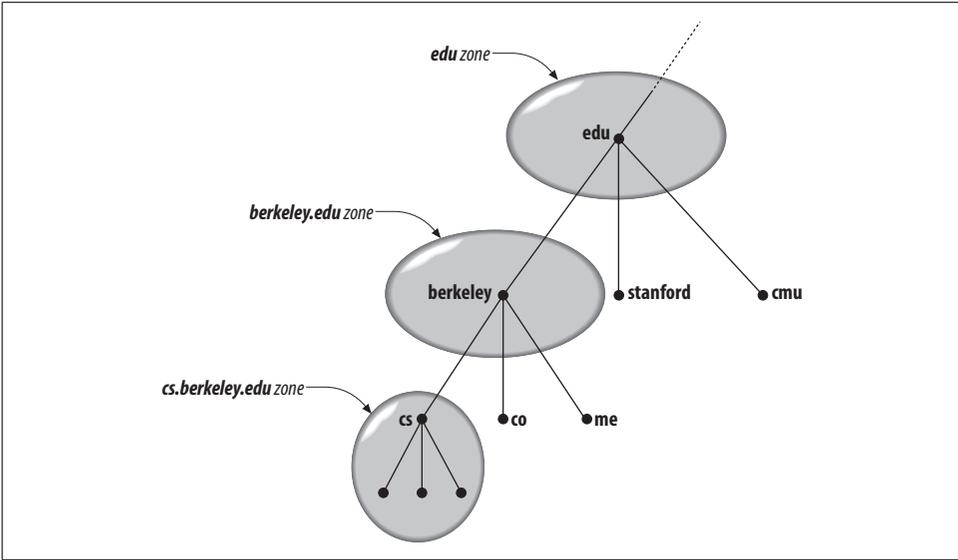


Figure 1-4. The edu, berkeley.edu, and cs.berkeley.edu zones

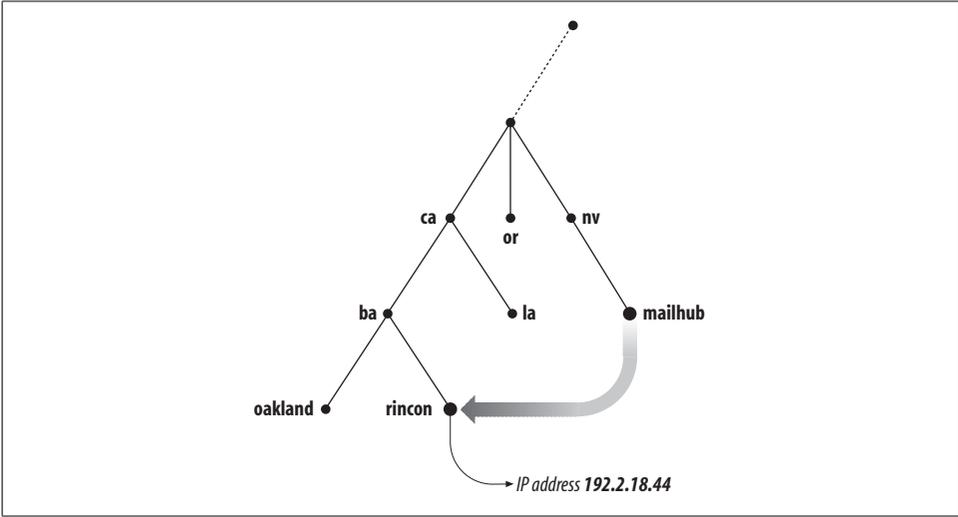


Figure 1-5. An alias in DNS pointing to a canonical name

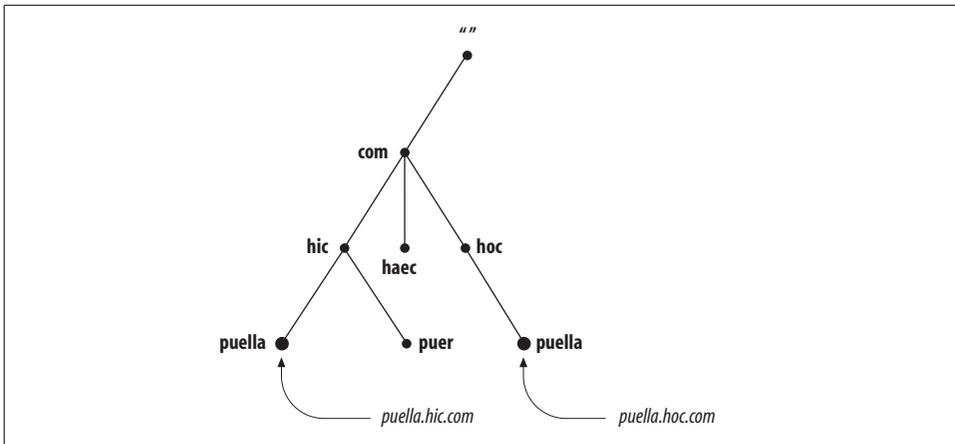


Figure 1-6. Solving the name collision problem

The History of BIND

The first implementation of the Domain Name System was called JEEVES, written by Paul Mockapetris himself. A later implementation was BIND, an acronym for *Berkeley Internet Name Domain*, written by Kevin Dunlap for Berkeley's 4.3 BSD Unix. BIND is now maintained by the Internet Systems Consortium.*

BIND is the implementation we'll concentrate on in this book and is by far the most popular implementation of DNS today. It has been ported to most flavors of Unix and is shipped as a standard part of most vendors' Unix offerings. BIND has even been ported to Microsoft's Windows NT, Windows 2000, and Windows Server 2003.

Must I Use DNS?

Despite the usefulness of the Domain Name System, there are some situations in which it doesn't pay to use it. There are other name-resolution mechanisms besides DNS, some of which may be a standard part of your operating system. Sometimes the overhead involved in managing zones and their nameservers outweighs the benefits. On the other hand, there are circumstances in which you have no other choice

* For more information on the Internet Systems Consortium and its work on BIND, see <http://www.isc.org/sw/bind/>.

but to set up and manage nameservers. Here are some guidelines to help you make that decision:

If you're connected to the Internet...

...DNS is a must. Think of DNS as the *lingua franca* of the Internet: nearly all of the Internet's network services use DNS. That includes the Web, electronic mail, remote terminal access, and file transfer.

On the other hand, this doesn't necessarily mean that you have to set up and run zones *by yourself for yourself*. If you've only got a handful of hosts, you may be able to join an existing zone (see Chapter 3) or find someone else to host your zones for you. If you pay an Internet service provider for your Internet connectivity, ask if it'll host your zone for you, too. Even if you aren't already a customer, there are companies that will help out, for a price.

If you have a little more than a handful of hosts, or a lot more, you'll probably want your own zone. And if you want direct control over your zone and your nameservers, you'll want to manage it yourself. Read on!

If you have your own TCP/IP-based internet...

...you probably want DNS. By an internet, we don't mean just a single Ethernet of workstations using TCP/IP (see the next section if you thought that was what we meant); we mean a fairly complex "network of networks." Maybe you have several dozen Ethernet segments connected via routers, for example.

If your internet is basically homogeneous and your hosts don't need DNS (say they don't run TCP/IP at all), you may be able to do without it. But if you've got a variety of hosts, especially if some of those run some variety of Unix, you'll want DNS. It'll simplify the distribution of host information and rid you of any kludgy host-table distribution schemes you may have cooked up.

If you have your own local area network or site network...

...and that network isn't connected to a larger network, you can probably get away without using DNS. You might consider using Microsoft's Windows Internet Name Service (WINS), host tables, or Sun's Network Information Service (NIS) product.

But if you need distributed administration or have trouble maintaining the consistency of data on your network, DNS may be for you. And if your network is likely to soon be connected to another network, such as your corporate internet or the Internet, it'd be wise to set up your zones now.

How Does DNS Work?

“...and what is the use of a book,” thought Alice,
“without pictures or conversations?”

The Domain Name System is basically a database of host information. Admittedly, you get a lot with that: funny dotted names, networked nameservers, a shadowy “namespace.” But keep in mind that, in the end, the service DNS provides is information about internet hosts.

We’ve already covered some important aspects of DNS, including its client/server architecture and the structure of the DNS database. However, we haven’t gone into much detail, and we haven’t explained the nuts and bolts of DNS’s operation.

In this chapter, we’ll explain and illustrate the mechanisms that make DNS work. We’ll also introduce the terms you’ll need to know to read the rest of the book (and to converse intelligently with your fellow zone administrators).

First, though, let’s take a more detailed look at the concepts introduced in the previous chapter. We’ll try to add enough detail to spice it up a little.

The Domain Namespace

DNS’s distributed database is indexed by domain names. Each domain name is essentially just a path in a large inverted tree, called the *domain namespace*. The tree’s hierarchical structure, shown in Figure 2-1, is similar to the structure of the Unix filesystem. The tree has a single root at the top.* In the Unix filesystem, this is called the *root directory* and is represented by a slash (/). DNS simply calls it “the root.” Like a filesystem, DNS’s tree can branch any number of ways at each intersection point, or node. The depth of the tree is limited to 127 levels (a limit you’re not likely to reach).

* Clearly this is a computer scientist’s tree, not a botanist’s.

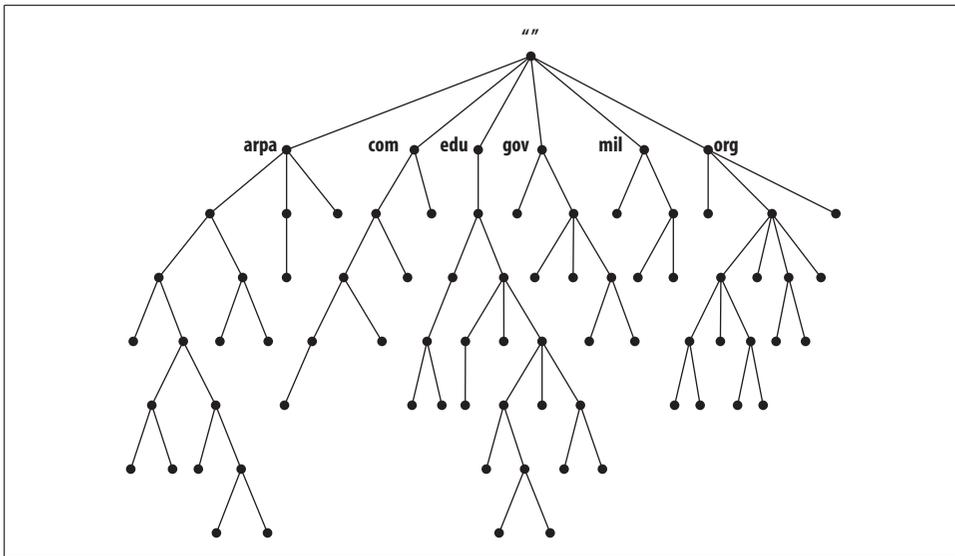


Figure 2-1. The structure of the DNS namespace

Domain Names

Each node in the tree has a text label (without dots) that can be up to 63 characters long. A null (zero-length) label is reserved for the root. The full domain name of any node in the tree is the sequence of labels on the path from that node to the root. Domain names are always read from the node toward the root (“up” the tree), with dots separating the names in the path.

If the root node’s label actually appears in a node’s domain name, the name looks as though it ends in a dot, as in “www.oreilly.com.” (It actually ends with a dot—the separator—and the root’s null label.) When the root node’s label appears by itself, it is written as a single dot, “.”, for convenience. Consequently, some software interprets a trailing dot in a domain name to indicate that the domain name is *absolute*. An absolute domain name is written relative to the root and unambiguously specifies a node’s location in the hierarchy. An absolute domain name is also referred to as a *fully qualified domain name*, often abbreviated FQDN. Names without trailing dots are sometimes interpreted as relative to some domain name other than the root, just as directory names without a leading slash are often interpreted as relative to the current directory.

DNS requires that sibling nodes—nodes that are children of the same parent—have different labels. This restriction guarantees that a domain name uniquely identifies a single node in the tree. The restriction really isn’t a limitation because the labels need to be unique only among the children, not among all the nodes in the tree. The same restriction applies to the Unix filesystem: you can’t give two sibling directories or two

files in the same directory the same name. As illustrated in Figure 2-2, just as you can't have two *hobbes.pa.ca.us* nodes in the namespace, you can't have two */usr/bin* directories. You can, however, have both a *hobbes.pa.ca.us* node and a *hobbes.lg.ca.us* node, as you can have both a */bin* directory and a */usr/bin* directory.

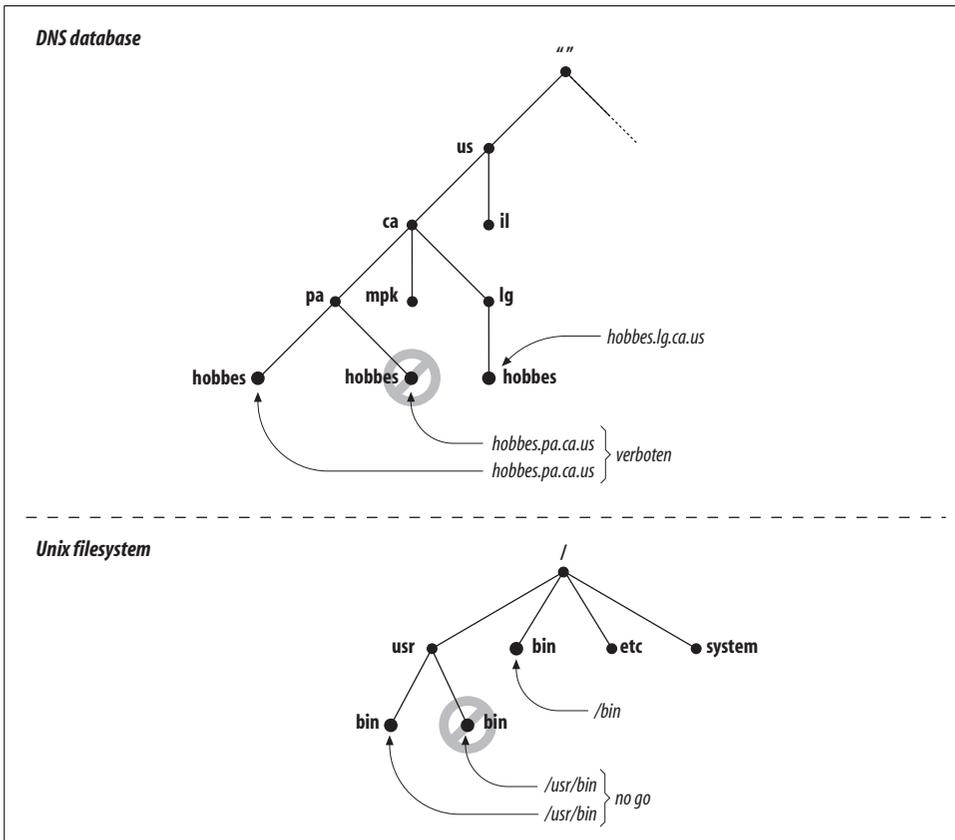


Figure 2-2. Ensuring uniqueness in domain names and in Unix pathnames

Domains

A *domain* is simply a subtree of the domain namespace. The domain name of a domain is the same as the domain name of the node at the very top of the domain. So, for example, the top of the *purdue.edu* domain is a node named *purdue.edu*, as shown in Figure 2-3.

Likewise, in a filesystem, at the top of the */usr* directory, you'd expect to find a node called */usr*, as shown in Figure 2-4.

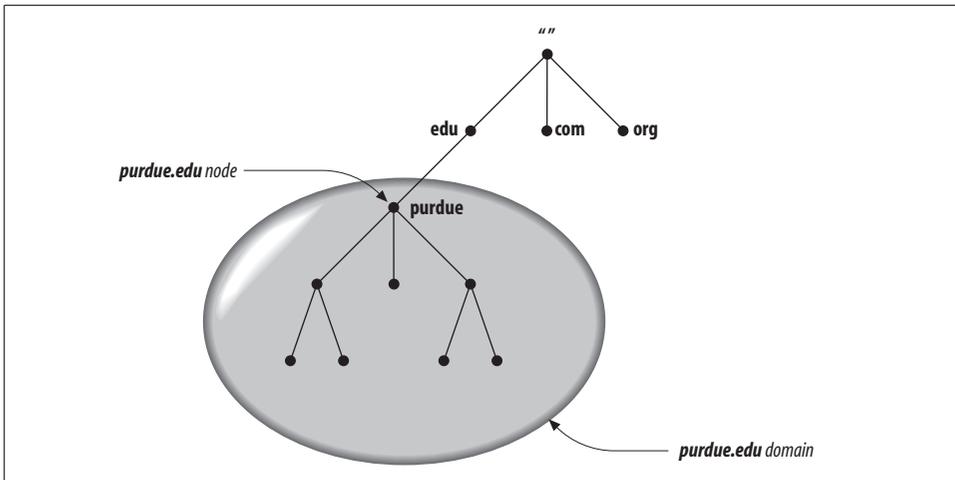


Figure 2-3. The *purdue.edu* domain

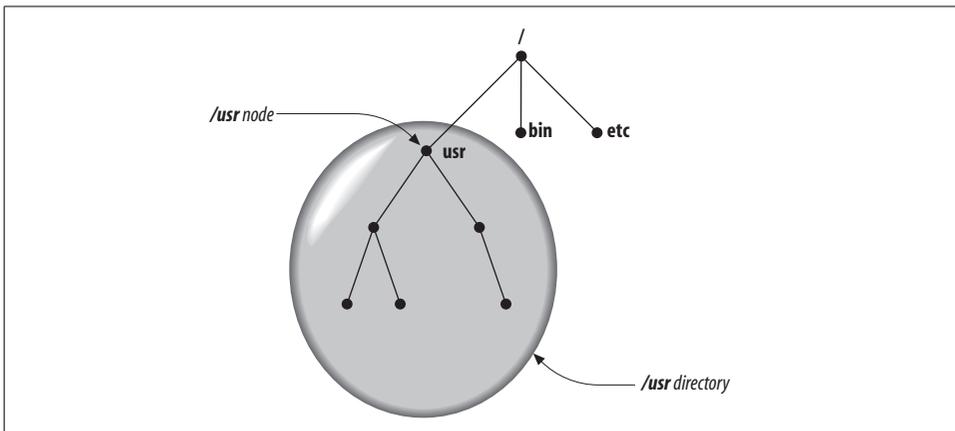


Figure 2-4. The */usr* directory

Any domain name in the subtree is considered a part of the domain. Because a domain name can be in many subtrees, a domain name can also be in many domains. For example, the domain name *pa.ca.us* is part of the *ca.us* domain and also part of the *us* domain, as shown in Figure 2-5.

So in the abstract, a domain is just a subtree of the domain namespace. But if a domain is simply made up of domain names and other domains, where are all the hosts? Domains are groups of hosts, right?

The hosts are there, represented by domain names. Remember, domain names are just indexes into the DNS database. The “hosts” are the domain names that point to information about individual hosts, and a domain contains all the hosts whose domain names are within the domain. The hosts are related *logically*, often by geography or

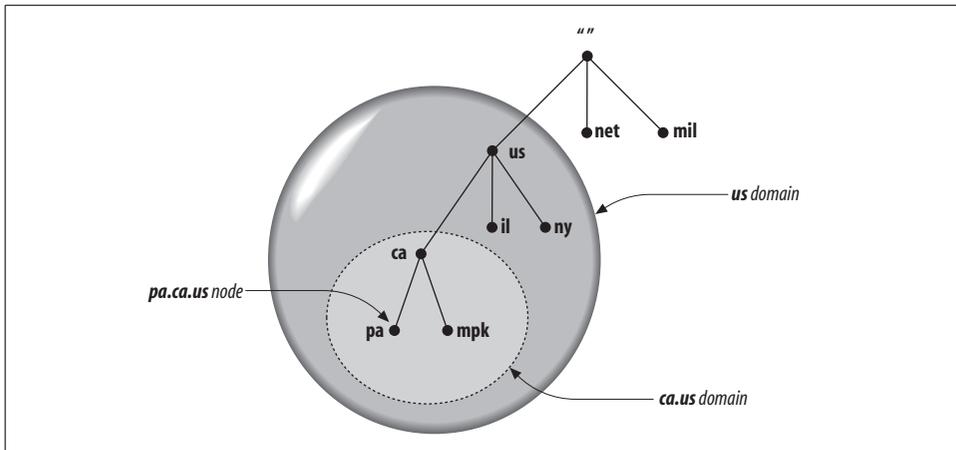


Figure 2-5. A node in multiple domains

organizational affiliation, and not necessarily by network or address or hardware type. You might have 10 different hosts, each of them on a different network and perhaps even in different countries, all in the same domain.

One note of caution: don't confuse domains in DNS with domains in NIS. Though an NIS domain also refers to a group of hosts, and both types of domains have similarly structured names, the concepts are quite different. NIS uses hierarchical names, but the hierarchy ends there: hosts in the same NIS domain share certain data about hosts and users, but they can't navigate the NIS namespace to find data in other NIS domains. NT domains, which provide account-management and security services, also don't have any relationship to DNS domains. Active Directory domains, however, are closely related to DNS domains. We discuss the relationship between DNS and Active Directory domains in Chapter 17.

Domain names at the leaves of the tree generally represent individual hosts, and they may point to network addresses, hardware information, and mail-routing information. Domain names in the interior of the tree can name a host *and* point to information about the domain; they aren't restricted to one or the other. Interior domain names can represent both the domain they correspond to and a particular host on the network. For example, *hp.com* is both the name of the Hewlett-Packard Company's domain and a domain name that refers to the hosts that run HP's main web server.

The type of information retrieved when you use a domain name depends on the context in which you use it. Sending mail to someone at *hp.com* returns mail-routing information, while *sshing* to the domain name looks up the host information (in Figure 2-6, for example, *hp.com*'s IP address).

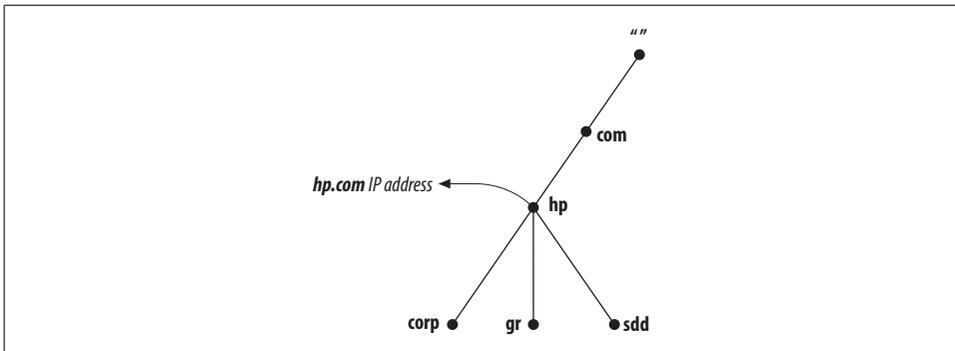


Figure 2-6. An interior node with both host and domain data

A domain may have several subtrees of its own, called *subdomains*.*

A simple way of determining if a domain is a subdomain of another domain is to compare their domain names. A subdomain's domain name ends with the domain name of its parent domain. For example, the domain *la.tyrell.com* must be a subdomain of *tyrell.com*, because *la.tyrell.com* ends with *tyrell.com*. It's also a subdomain of *com*, as is *tyrell.com*.

Besides being referred to in relative terms, as subdomains of other domains, domains are often referred to by *level*. On mailing lists and in Usenet newsgroups, you may see the terms *top-level domain* or *second-level domain* bandied about. These terms simply refer to a domain's position in the domain namespace:

- A top-level domain is a child of the root.
- A first-level domain is a child of the root (a top-level domain).
- A second-level domain is a child of a first-level domain, and so on.

Resource Records

The data associated with domain names is contained in *resource records*, or RRs. Records are divided into classes, each of which pertains to a type of network or software. Currently, there are classes for internets (any TCP/IP-based internet), networks based on the Chaosnet protocols, and networks that use Hesiod software. (Chaosnet is an old network of largely historic significance.) The internet class is by far the most popular. (We're not really sure if anyone still uses the Chaosnet class, and use of the Hesiod class is mostly confined to MIT.) In this book, we concentrate on the internet class.

* The terms "domain" and "subdomain" are often used interchangeably, or nearly so, in DNS documentation. Here, we use subdomain only as a relative term: a domain is a subdomain of another domain if the root of the subdomain is within the domain.

Within a class, records come in several types, which correspond to the different varieties of data that may be stored in the domain namespace. Different classes may define different record types, though some types are common to more than one class. For example, almost every class defines an *address* type. Each record type in a given class defines a particular record syntax to which all resource records of that class and type must adhere.

If this information seems sketchy, don't worry: we'll cover the records in the internet class in more detail later. The common records are described in Chapter 4, and a more comprehensive list is included as part of Appendix A.

The Internet Domain Namespace

So far, we've talked about the theoretical structure of the domain namespace and what sort of data is stored in it, and we've even hinted at the types of names you might find in it with our (sometimes fictional) examples. But this won't help you decode the domain names you see on a daily basis on the Internet.

The Domain Name System doesn't impose many rules on the labels in domain names, and it doesn't attach any *particular* meaning to the labels at a given level of the namespace. When you manage a part of the domain namespace, you can decide on your own semantics for your domain names. Heck, you could name your subdomains A through Z, and no one would stop you (though they might strongly recommend against it).

The existing Internet domain namespace, however, has some self-imposed structure to it. Especially in the upper-level domains, the domain names follow certain traditions (not rules, really, because they can be and have been broken). These traditions help to keep domain names from appearing totally chaotic. Understanding these traditions is an enormous asset if you're trying to decipher a domain name.

Top-Level Domains

The original top-level domains divided the Internet domain namespace organizationally into seven domains:

com

Commercial organizations, such as Hewlett-Packard (*hp.com*), Sun Microsystems (*sun.com*), and IBM (*ibm.com*).

edu

Educational organizations, such as U.C. Berkeley (*berkeley.edu*) and Purdue University (*purdue.edu*).

gov

Government organizations, such as NASA (*nasa.gov*) and the National Science Foundation (*nsf.gov*).

mil

Military organizations, such as the U.S. Army (*army.mil*) and Navy (*navy.mil*).

net

Formerly organizations providing network infrastructure, such as NSFNET (*nsf.net*) and UUNET (*uu.net*). Since 1996, however, *net* has been open to any commercial organization, like *com* is.

org

Formerly noncommercial organizations, such as the Electronic Frontier Foundation (*eff.org*). Like *net*, though, restrictions on *org* were removed in 1996.

int

International organizations, such as NATO (*nato.int*).

Another top-level domain called *arpa* was originally used during the ARPANet's transition from host tables to DNS. All ARPANet hosts originally had hostnames under *arpa*, so they were easy to find. Later, they moved into various subdomains of the organizational top-level domains. However, the *arpa* domain remains in use in a way you'll read about later.

You may notice a certain nationalistic prejudice in our examples: we've used primarily U.S.-based organizations. That's easier to understand—and forgive—when you remember that the Internet began as the ARPANet, a U.S.-funded research project. No one anticipated the success of the ARPANet, or that it would eventually become as international as the Internet is today.

Today, these original seven domains are called *generic top-level domains*, or gTLDs. The “generic” contrasts them with the country-code top-level domains, which are specific to a particular country.

Country-code top-level domains

To accommodate the increasing internationalization of the Internet, the implementers of the Internet namespace compromised. Instead of insisting that all top-level domains describe organizational affiliation, they decided to allow geographical designations, too. New top-level domains were reserved (but not necessarily created) to correspond to individual countries. Their domain names followed an existing international standard called ISO 3166.* ISO 3166 establishes official, two-letter abbreviations for every country in the world. We've included the current list of top-level domains as Appendix D.

* Except for Great Britain. According to ISO 3166 and Internet tradition, Great Britain's top-level domain name should be *gb*. Instead, most organizations in Great Britain and Northern Ireland (i.e., the United Kingdom) use the top-level domain name *uk*. They drive on the wrong side of the road, too.

New top-level domains

In late 2000, the organization that manages the Domain Name System, the Internet Corporation for Assigned Names and Numbers, or ICANN, created seven new generic top-level domains to accommodate the rapid expansion of the Internet and the need for more domain name “space.” A few of these were truly generic top-level domains, like *com*, *net*, and *org*, while others were closer in purpose to *gov* and *mil*: reserved for use by a specific (and sometimes surprisingly small) community. ICANN refers to this latter variety as *sponsored TLDs*, or sTLDs, and the former as *unsponsored gTLDs*. Sponsored TLDs have a charter, which defines their function, and a sponsoring organization, which sets policies governing the sTLDs and oversees their operation on ICANN’s behalf.

Here are the new gTLDs:

aero

Sponsored; for the aeronautical industry

biz

Generic

coop

Sponsored; for cooperatives

info

Generic

museum

Sponsored; for museums

name

Generic; for individuals

pro

Generic; for professionals

More recently, in early 2005, ICANN approved two more sponsored TLDs, *jobs*, for the human resources management industry, and *travel*, for the travel industry. Several other sponsored TLDs were also under evaluation, including *cat*, for the Catalan linguistic and cultural community, *mobi*, for mobile devices, and *post*, for the postal community. So far, only *mobi* has been delegated from the root. You can check out ICANN at <http://www.icann.org>.

Further Down

Within these top-level domains, the traditions and the extent to which they are followed vary. Some of the ISO 3166 top-level domains closely follow the United States’s original organizational scheme. For example, Australia’s top-level domain, *au*, has subdomains such as *edu.au* and *com.au*. Some other ISO 3166 top-level domains follow the *uk* domain’s lead and have organizationally oriented subdomains such as *co.uk* for

corporations and *ac.uk* for the academic community. In most cases, however, even these geographically oriented top-level domains are divided up organizationally.

That wasn't originally true of the *us* top-level domain, though. In the beginning, the *us* domain had 50 subdomains that corresponded to—guess what?—the 50 U.S. states.* Each was named according to the standard two-letter abbreviation for the state—the same abbreviation standardized by the U.S. Postal Service. Within each state's domain, the organization was still largely geographical: most subdomains corresponded to individual cities. Beneath the cities, the subdomains usually corresponded to individual hosts.

As with so many namespace rules, though, this structure was abandoned when a new company, Neustar, began managing *us* in 2002. Now *us*—like *com* and *net*—is open to all comers.

Reading Domain Names

Now that you know what most top-level domains represent and how their namespaces are structured, you'll probably find it much easier to make sense of most domain names. Let's dissect a few for practice:

lithium.cchem.berkeley.edu

You've got a head start on this one, as we've already told you that *berkeley.edu* is U.C. Berkeley's domain. (Even if you didn't already know that, though, you could have inferred that the name probably belongs to a U.S. university because it's in the top-level *edu* domain.) *cchem* is the College of Chemistry's subdomain of *berkeley.edu*. Finally, *lithium* is the name of a particular host in the domain—and probably one of about a hundred or so, if they have one for every element.

winnie.corp.hp.com

This example is a bit harder, but not much. The *hp.com* domain in all likelihood belongs to the Hewlett-Packard Company (in fact, we gave you this earlier, too). Its *corp* subdomain is undoubtedly its corporate headquarters. And *winnie* is probably just some silly name someone thought up for a host.

fernwood.mpk.ca.us

Here, you'll need to use your understanding of the *us* domain. *ca.us* is obviously California's domain, but *mpk* is anybody's guess. In this case, it would be hard to know that it's Menlo Park's domain unless you know your San Francisco Bay Area geography. (And no, it's not the same Menlo Park that Edison lived in—that one's in New Jersey.)

* Actually, there are a few more domains under *us*: one for Washington, D.C., one for Guam, and so on.

daphne.ch.apollo.hp.com

We've included this example just so you don't start thinking that all domain names have only four labels. *apollo.hp.com* is the former Apollo Computer subdomain of the *hp.com* domain. (When HP acquired Apollo, it also acquired Apollo's Internet domain, *apollo.com*, which became *apollo.hp.com*.) *ch.apollo.hp.com* is Apollo's Chelmsford, Massachusetts site. *daphne* is a host at Chelmsford.

Delegation

Remember that one of the main goals of the design of the Domain Name System was to decentralize administration? This is achieved through *delegation*. Delegating domains works a lot like delegating tasks at work. A manager may break up a large project into smaller tasks and delegate responsibility for each of these tasks to different employees.

Likewise, an organization administering a domain can divide it into subdomains. Each subdomain can be delegated to other organizations, which means that an organization becomes responsible for maintaining all the data in that subdomain. It can freely change the data and even divide its subdomain into more subdomains and delegate those. The parent domain retains only pointers to sources of the subdomain's data, so that it can refer queriers there. The domain *stanford.edu*, for example, is delegated to the folks at Stanford who run the university's networks (Figure 2-7).

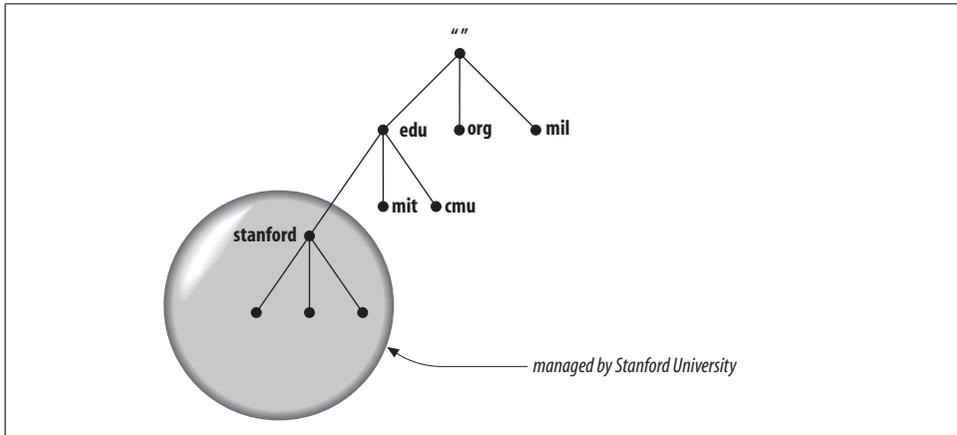


Figure 2-7. *stanford.edu* is delegated to Stanford University

Not all organizations delegate away their whole domain, just as not all managers delegate all their work. A domain may have several delegated subdomains and contain hosts that don't belong in the subdomains. For example, the Acme Corporation (it supplies a certain coyote with most of his gadgets), which has a division in Rockaway and its headquarters in Kalamazoo, might have a *rockaway.acme.com* subdomain and

a *kalamazoo.acme.com* subdomain. However, the few hosts in the Acme sales offices scattered throughout the United States would fit better under *acme.com* than under either subdomain.

We'll explain how to create and delegate subdomains later. For now, it's important only that you understand that the term delegation refers to assigning responsibility for a subdomain to another organization.

Nameservers and Zones

The programs that store information about the domain namespace are called *nameservers*. Nameservers generally have complete information about some part of the domain namespace, called a *zone*, which they load from a file or from another nameserver. The nameserver is then said to have *authority* for that zone. Nameservers can be authoritative for multiple zones, too.

The difference between a zone and a domain is important, but subtle. All top-level domains and many domains at the second level and lower, such as *berkeley.edu* and *hp.com*, are broken into smaller, more manageable units by delegation. These units are called zones. The *edu* domain, shown in Figure 2-8, is divided into many zones, including the *berkeley.edu* zone, the *purdue.edu* zone, and the *nwu.edu* zone. At the top of the domain, there's also an *edu* zone. It's natural that the folks who run *edu* would break up the *edu* domain: otherwise, they'd have to manage the *berkeley.edu* subdomain themselves. It makes much more sense to delegate *berkeley.edu* to Berkeley. What's left for the folks who run *edu*? The *edu* zone, which contains mostly delegation information for the subdomains of *edu*.

The *berkeley.edu* subdomain is, in turn, broken up into multiple zones by delegation, as shown in Figure 2-9. There are delegated subdomains called *cc*, *cs*, *ce*, *me*, and more. Each subdomain is delegated to a set of nameservers, some of which are also authoritative for *berkeley.edu*. However, the zones are still separate and may have totally different groups of authoritative nameservers.

A zone contains all the domain names the domain with the same domain name contains, except for domain names in delegated subdomains. For example, the top-level domain *ca* (for Canada) has subdomains called *ab.ca*, *on.ca*, and *qc.ca*, for the provinces Alberta, Ontario, and Quebec. Authority for the *ab.ca*, *on.ca*, and *qc.ca* domains may be delegated to nameservers in each province. The *domain ca* contains all the data in *ca* plus all the data in *ab.ca*, *on.ca*, and *qc.ca*. However, the *zone ca* contains only the data in *ca* (see Figure 2-10), which is probably mostly pointers to the delegated subdomains. *ab.ca*, *on.ca*, and *qc.ca* are separate zones from the *ca* zone.

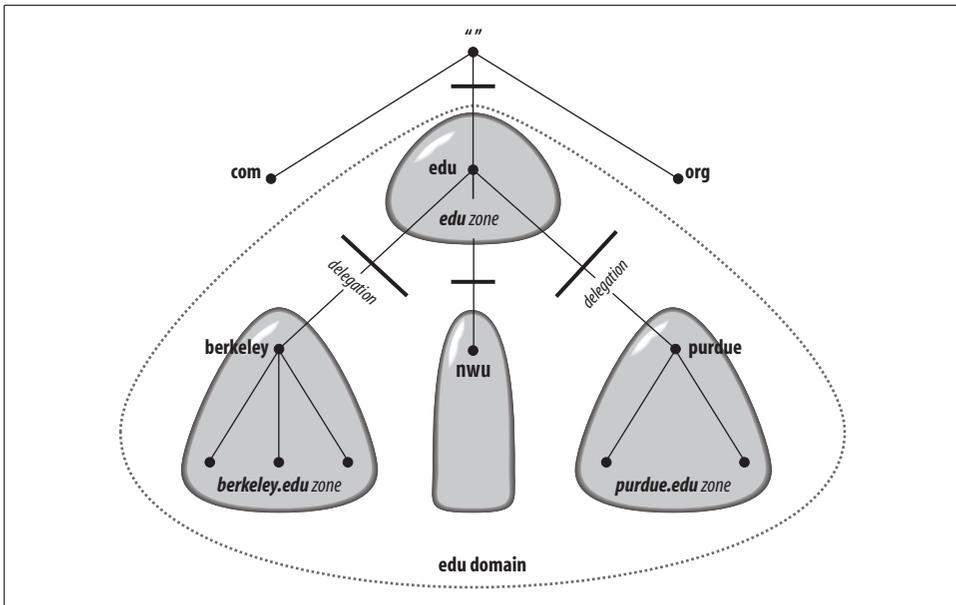


Figure 2-8. The edu domain broken into zones

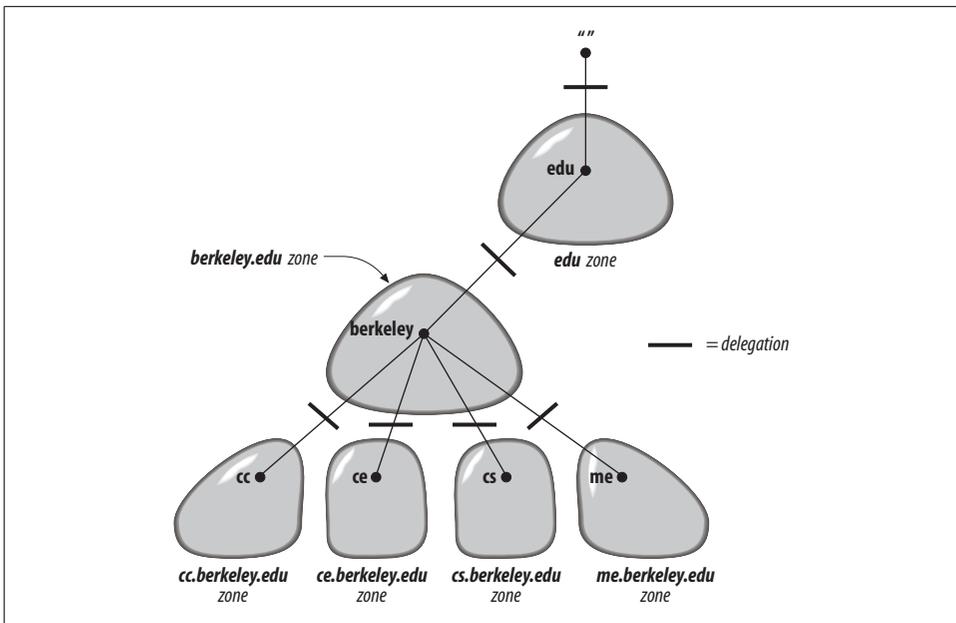


Figure 2-9. The berkeley.edu domain broken into zones

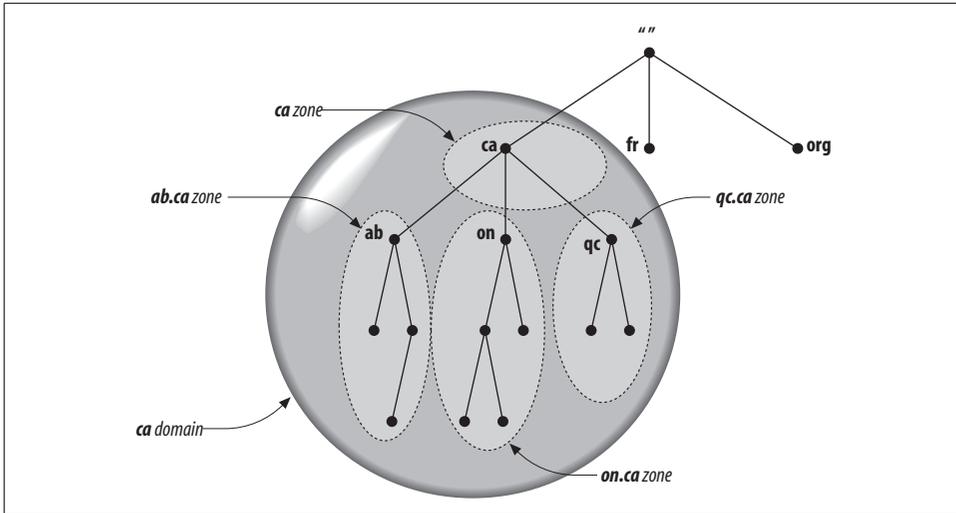


Figure 2-10. The domain *ca*...

The zone also contains the domain names and data in any subdomains that aren't delegated away. For example, the *bc.ca* and *sk.ca* (British Columbia and Saskatchewan) subdomains of the *ca* domain may exist but not be delegated. (Perhaps the provincial authorities in British Columbia and Saskatchewan aren't yet ready to manage their subdomains, but the authorities running the top-level *ca* domain want to preserve the consistency of the namespace and implement subdomains for all the Canadian provinces right away.) In this case, the zone *ca* has a ragged bottom edge, containing *bc.ca* and *sk.ca* but not the other *ca* subdomains, as shown in Figure 2-11.

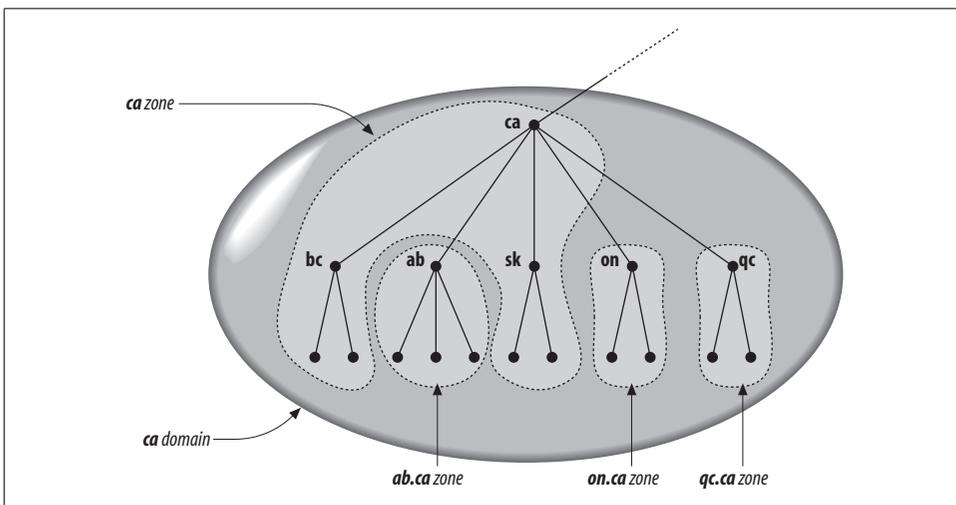


Figure 2-11. ...versus the zone *ca*

Now it's clear why nameservers load zones instead of domains: a domain may contain more information than the nameserver needs because it can contain data delegated to other nameservers.* Since a zone is bounded by delegation, it will never include delegated data.

If you're just starting out, your domain probably won't have any subdomains. In this case, since there's no delegation going on, your domain and your zone will contain the same data.

Delegating Subdomains

Even though you may not need to delegate parts of your domain just yet, it's helpful to understand a little more about how the process of delegating a subdomain works. Delegation, in the abstract, involves assigning responsibility for some part of your domain to another organization. What really happens, however, is the assignment of authority for a subdomain to different nameservers. (Note that we said "nameservers," not just "nameserver.")

Your zone's data, instead of containing information in the subdomain you've delegated, includes pointers to the nameservers that are authoritative for that subdomain. Now if one of your nameservers is asked for data in the subdomain, it can reply with a list of the right nameservers to contact.

Types of Nameservers

The DNS specs define two types of nameservers: primary masters and secondary masters. A *primary master nameserver* for a zone reads the data for the zone from a file on its host. A *secondary master nameserver* for a zone gets the zone data from another nameserver authoritative for the zone, called its *master server*. Quite often, the master server is the zone's primary master, but that's not required: a secondary master can load zone data from another secondary. When a secondary starts up, it contacts its master nameserver and, if necessary, pulls the zone data over. This is referred to as a *zone transfer*. Nowadays, the preferred term for a secondary master nameserver is a *slave*, though many people (and some software, including Microsoft's DNS console) still use the old term.

Both the primary master and slave nameservers for a zone are authoritative for that zone. Despite the somewhat disparaging name, slaves aren't second-class nameservers. DNS provides these two types of nameservers to make administration easier. Once you've created the data for your zone and set up a primary master nameserver, you don't need to copy that data from host to host to create new nameservers for the

* Imagine if a root nameserver loaded the root domain instead of the root zone: it would be loading the entire namespace!

zone. You simply set up slave nameservers that load their data from the primary master for the zone. The slaves you set up will transfer new zone data when necessary.

Slave nameservers are important because it's a good idea to set up more than one authoritative nameserver for any given zone. You'll want more than one for redundancy, to spread the load around and to make sure that all the hosts in the zone have a nameserver close by. Using slave nameservers makes this administratively workable.

Calling a *particular* nameserver a primary master nameserver or a slave nameserver is a little imprecise, though. We mentioned earlier that a nameserver can be authoritative for more than one zone. Similarly, a nameserver can be a primary master for one zone and a slave for another. Most nameservers, however, are either primary for most of the zones they load or slave for most of the zones they load. So if we call a particular nameserver a primary or a slave, we mean that it's the primary master or a slave for *most* of the zones for which it's authoritative.

Zone Datafiles

The files from which primary master nameservers load their zone data are called, simply enough, *zone datafiles*. We often refer to them as *datafiles*. Slave nameservers can also load their zone data from datafiles. Slaves are usually configured to back up the zone data they transfer from a master nameserver to datafiles. If the slave is later killed and restarted, it reads the backup datafiles first, then checks to see whether its zone data is current. This both obviates the need to transfer the zone data if it hasn't changed and provides a source of the data if the master is down.

The datafiles contain resource records that describe the zone. The resource records describe all the hosts in the zone and mark any delegation of subdomains. BIND also allows special directives to include the contents of other datafiles in a zone datafile, much like the *#include* statement in C programming.

Resolvers

Resolvers are the clients that access nameservers. Programs running on a host that need information from the domain namespace use the resolver. The resolver handles:

- Querying a nameserver
- Interpreting responses (which may be resource records or an error)
- Returning the information to the programs that requested it

In BIND, the resolver is a set of library routines that is linked to programs such as *ssh* and *ftp*. It's not even a separate process. The resolver relies almost entirely on the nameservers it queries: it has the smarts to put together a query, to send it and wait for an answer, and to resend the query if it isn't answered, but that's about all. Most

of the burden of finding an answer to the query is placed on the nameserver. The DNS specs call this kind of resolver a *stub resolver*.

Other implementations of DNS have had smarter resolvers that could do more sophisticated things that had more advanced capabilities, such as following referrals to locate the nameservers authoritative for a particular zone.

Resolution

Nameservers are adept at retrieving data from the domain namespace. They have to be, given the limited intelligence of most resolvers. Not only can they give you data about zones for which they're authoritative, they can also search through the domain namespace to find data for which they're not authoritative. This process is called *name resolution*, or simply *resolution*.

Because the namespace is structured as an inverted tree, a nameserver needs only one piece of information to find its way to any point in the tree: the domain names and addresses of the root nameservers (is that more than one piece?). A nameserver can issue a query to a root nameserver for any domain name in the domain namespace, and the root nameserver will start the nameserver on its way.

Root Nameservers

The root nameservers know where the authoritative nameservers for each of the top-level zones are. (In fact, some of the root nameservers are authoritative for some of the generic top-level zones.) Given a query about any domain name, the root nameservers can at least provide the names and addresses of the nameservers that are authoritative for the top-level zone the domain name ends in. In turn, the top-level nameservers can provide the list of authoritative nameservers for the second-level zone that the domain name ends in. Each nameserver queried either gives the querier information about how to get “closer” to the answer it's seeking or provides the answer itself. The root nameservers are clearly important to resolution. Because they're so important, DNS provides mechanisms—such as caching, which we'll discuss a little later—to help offload the root nameservers. But in the absence of other information, resolution has to start at the root nameservers. This makes the root nameservers crucial to the operation of DNS; if all the Internet root nameservers were unreachable for an extended period, all resolution on the Internet would fail. To protect against this, the Internet has 13 root nameservers (as of this writing) spread across different parts of the network.* One is on PSINet, a commercial Internet backbone; one is on the NASA Science Internet; two are in Europe; and one is in Japan.

* In fact, the 13 “logical” root nameservers comprise many more physical nameservers. Most of the root servers are either load-balanced behind a single IP address, a “shared unicast” group of distributed nameservers that use the same IP address, or some combination of the two.

Being the focal point for so many queries keeps the roots busy; even with 13, the traffic to each root nameserver is very high. A recent informal poll of root nameserver administrators showed some roots receiving tens of thousands of queries per second.

Despite the load placed on root nameservers, resolution on the Internet works quite well. Figure 2-12 shows the resolution process for the address of a real host in a real domain, including how the process corresponds to traversing the domain namespace tree.

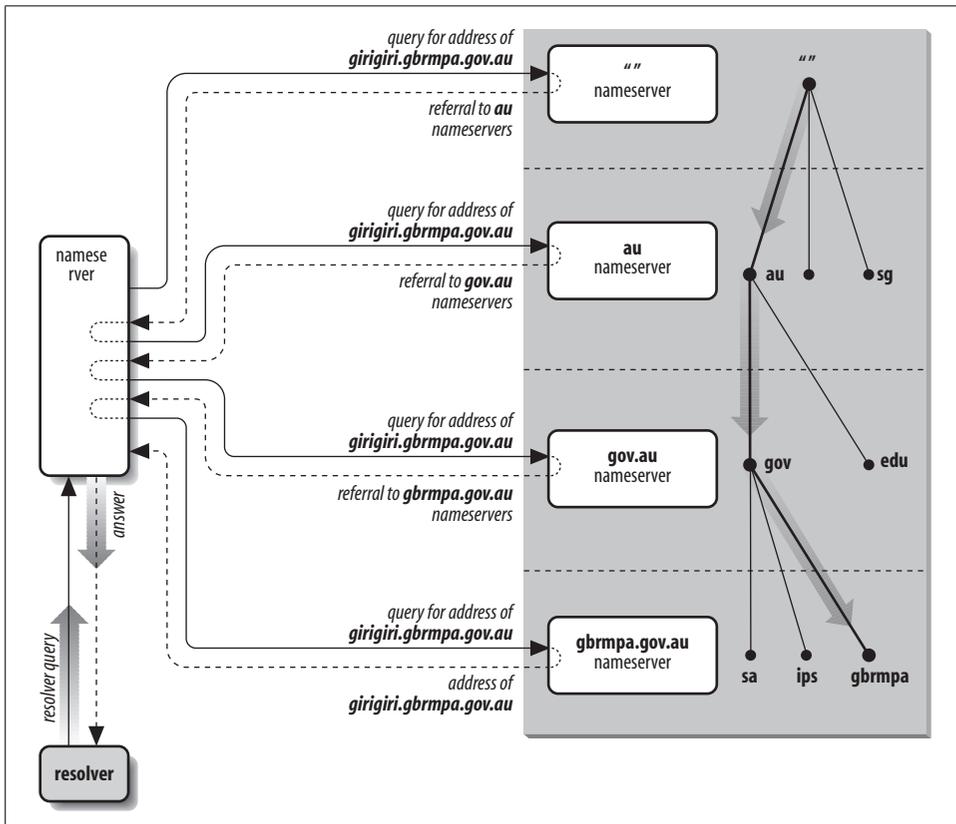


Figure 2-12. Resolution of `girigiri.gbrmpa.gov.au` on the Internet

The local nameserver queries a root nameserver for the address of `girigiri.gbrmpa.gov.au` and is referred to the `au` nameservers. The local nameserver asks an `au` nameserver the same question, and is referred to the `gov.au` nameservers. The `gov.au` nameserver refers the local nameserver to the `gbrmpa.gov.au` nameservers. Finally, the local nameserver asks a `gbrmpa.gov.au` nameserver for the address and gets the answer.

Recursion

You may have noticed a big difference in the amount of work done by the nameservers in the previous example. Four nameservers simply returned the best answer they already had—mostly referrals to other nameservers—to the queries they received. They didn't have to send their own queries to find the data requested. But one nameserver—the one queried by the resolver—had to follow successive referrals until it received an answer.

Why couldn't the local nameserver simply have referred the resolver to another nameserver? Because a stub resolver wouldn't have had the intelligence to follow a referral. And how did the nameserver know not to answer with a referral? Because the resolver issued a *recursive* query. Queries come in two flavors, *recursive* and *iterative*, also called *nonrecursive*. Recursive queries place most of the burden of resolution on a single nameserver. *Recursion*, or *recursive resolution*, is just a name for the resolution process used by a nameserver when it receives recursive queries. As with recursive algorithms in programming, the nameserver repeats the same basic process (querying a remote nameserver and following any referrals) until it receives an answer.

Iteration, or *iterative resolution*, on the other hand, refers to the resolution process used by a nameserver when it receives iterative queries.

In recursion, a resolver sends a recursive query to a nameserver for information about a particular domain name. The queried nameserver is then obliged to respond with the requested data or with an error stating either that data of the requested type doesn't exist or that the domain name specified doesn't exist.* The nameserver can't just refer the querier to a different nameserver, because the query was recursive.

If the queried nameserver isn't authoritative for the data requested, it will have to query other nameservers to find the answer. It could send recursive queries to those nameservers, thereby obliging them to find the answer and return it (and passing the buck), or it could send iterative queries and possibly be referred to other nameservers "closer" to the domain name it's seeking. Current implementations are polite and by default do the latter, following the referrals until an answer is found.†

A nameserver that receives a recursive query that it can't answer itself will query the "closest known" nameservers. The closest known nameservers are the servers authoritative for the zone closest to the domain name being looked up. For example, if the nameserver receives a recursive query for the address of the domain name *girigiri.gbrmpa.gov.au*, it first checks whether it knows which nameservers are

* Most BIND nameservers can be configured to ignore or refuse recursive queries; see Chapter 11 for how to do this and why you'd want to.

† The exception is a nameserver configured to forward all unresolved queries to a designated nameserver, called a forwarder. See Chapter 10 for more information on using forwarders.

authoritative for *girigiri.gbrmpa.gov.au*. If it does, it sends the query to one of them. If not, it checks whether it knows the nameservers for *gbrmpa.gov.au*, and after that *gov.au*, and then *au*. The default, where the check is guaranteed to stop, is the root zone, because every nameserver knows the domain names and addresses of the root nameservers.

Using the closest known nameservers ensures that the resolution process is as short as possible. A *berkeley.edu* nameserver receiving a recursive query for the address of *waxwing.ce.berkeley.edu* shouldn't have to consult the root nameservers; it can simply follow delegation information directly to the *ce.berkeley.edu* nameservers. Likewise, a nameserver that has just looked up a domain name in *ce.berkeley.edu* shouldn't have to start resolution at the root to look up another *ce.berkeley.edu* (or *berkeley.edu*) domain name; we'll show how this works in the "Caching" section.

The nameserver that receives the recursive query always sends the same query that the resolver sent it—for example, for the address of *waxwing.ce.berkeley.edu*. It never sends explicit queries for the nameservers for *ce.berkeley.edu* or *berkeley.edu*, though this information is also stored in the namespace. Sending explicit queries could cause problems—for example, there may be no *ce.berkeley.edu* nameservers (that is, *ce.berkeley.edu* may be part of the *berkeley.edu* zone). Also, it's always possible that an *edu* or *berkeley.edu* nameserver would know *waxwing.ce.berkeley.edu*'s address. An explicit query for the *berkeley.edu* or *ce.berkeley.edu* nameservers would miss this information.

Iteration

Iterative resolution doesn't require nearly as much work on the part of the queried nameserver. In iterative resolution, a nameserver simply gives the best answer *it already knows* back to the querier. No additional querying is required. The queried nameserver consults its local data (including its cache, which we'll talk about shortly), looking for the data requested. If it doesn't find the answer there, it finds the names and addresses of the nameservers closest to the domain name in the query in its local data and returns that as a referral to help the querier continue the resolution process. Note that the referral includes *all* nameservers listed in the local data; it's up to the querier to choose which one to query next.

Choosing Between Authoritative Nameservers

Some of the card-carrying Mensa members in our reading audience may be wondering how the nameserver that receives the recursive query chooses among the nameservers authoritative for the zone. For example, we said that there are 13 root nameservers on the Internet today. Does the nameserver simply query the one that appears first in the referral? Does it choose randomly?

BIND nameservers use a metric called *roundtrip time*, or RTT, to choose among nameservers authoritative for the same zone. Roundtrip time is a measurement of how long a remote nameserver takes to respond to queries. Each time a BIND nameserver sends a query to a remote nameserver, it starts an internal stopwatch. When it receives a response, it stops the stopwatch and makes a note of how long that remote nameserver took to respond. When the nameserver must choose which of a group of authoritative nameservers to query, it simply chooses the one with the lowest roundtrip time.

Before a BIND nameserver has queried a nameserver, it gives it a random roundtrip time value lower than any real-world value. This ensures that the BIND nameserver queries all nameservers authoritative for a given zone in a random order before playing favorites.

On the whole, this simple but elegant algorithm allows BIND nameservers to “lock on” to the closest nameservers quickly and without the overhead of an out-of-band mechanism to measure performance.

The Whole Enchilada

What this amounts to is a resolution process that, taken as a whole, looks like Figure 2-13.

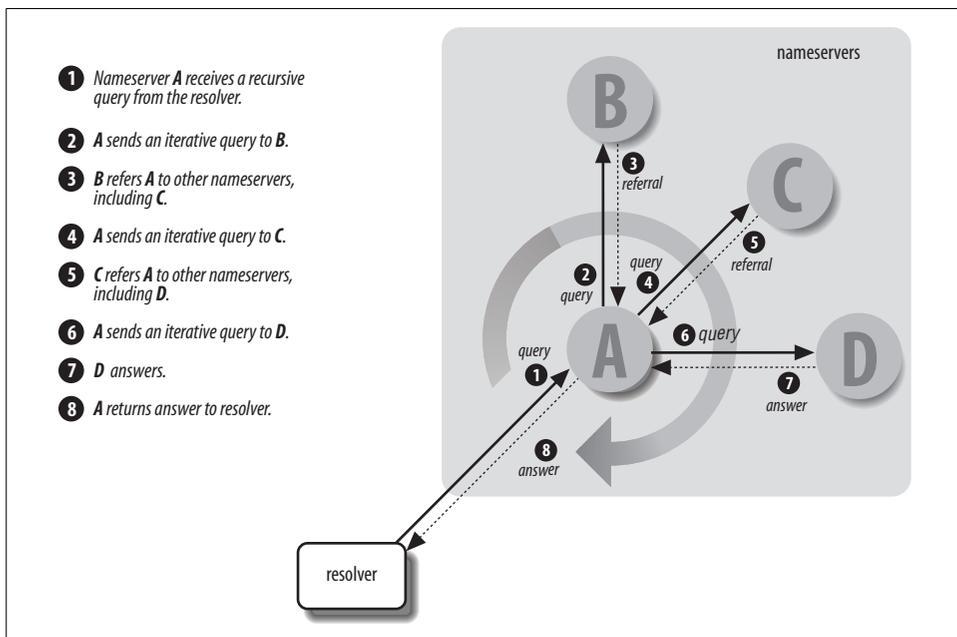


Figure 2-13. The resolution process

A resolver queries a local nameserver, which then sends iterative queries to a number of other nameservers in pursuit of an answer for the resolver. Each nameserver it queries refers it to another nameserver that is authoritative for a zone further down in the namespace and closer to the domain name sought. Finally, the local nameserver queries the authoritative nameserver, which returns an answer. All the while, the local nameserver uses each response it receives—whether a referral or the answer—to update the RTT of the responding nameserver, which will help it decide which nameservers to query to resolve domain names in the future.

Mapping Addresses to Names

One major piece of functionality missing from the resolution process as explained so far is how addresses get mapped back to domain names. Address-to-name mapping produces output that is easier for humans to read and interpret (in logfiles, for instance). It's also used in some authorization checks. Unix hosts map addresses to domain names to compare against entries in *.rhosts* and *hosts.equiv* files, for example. When using host tables, address-to-name mapping is trivial. It requires a straightforward sequential search through the host table for an address. The search returns the official hostname listed. In DNS, however, address-to-name mapping isn't so simple. Data, including addresses, in the domain namespace is indexed by name. Given a domain name, finding an address is relatively easy. But finding the domain name that maps to a given address would seem to require an exhaustive search of the data attached to every domain name in the tree.

Actually, there's a better solution that's both clever and effective. Because it's easy to find data once you're given the domain name that indexes that data, why not create a part of the domain namespace that uses addresses as labels? In the Internet's domain namespace, this portion of the namespace is the *in-addr.arpa* domain.

Nodes in the *in-addr.arpa* domain are labeled with the numbers in the dotted-octet representation of IP addresses. (Dotted-octet representation refers to the common method of expressing 32-bit IP addresses as four numbers in the range 0 to 255, separated by dots.) The *in-addr.arpa* domain, for example, can have up to 256 subdomains, one corresponding to each possible value in the first octet of an IP address. Each subdomain can have up to 256 subdomains of its own, corresponding to the possible values of the second octet. Finally, at the fourth level down, there are resource records attached to the final octet giving the full domain name of the host at that IP address. That makes for an awfully big domain: *in-addr.arpa*, shown in Figure 2-14, is roomy enough for every IP address on the Internet.

Note that when read in a domain name, the IP address appears backward because the name is read from leaf to root. For example, if *winnie.corp.hp.com*'s IP address is 15.16.192.152, the corresponding node in the *in-addr.arpa* domain is *152.192.16.15.in-addr.arpa*, which maps back to the domain name *winnie.corp.hp.com*.

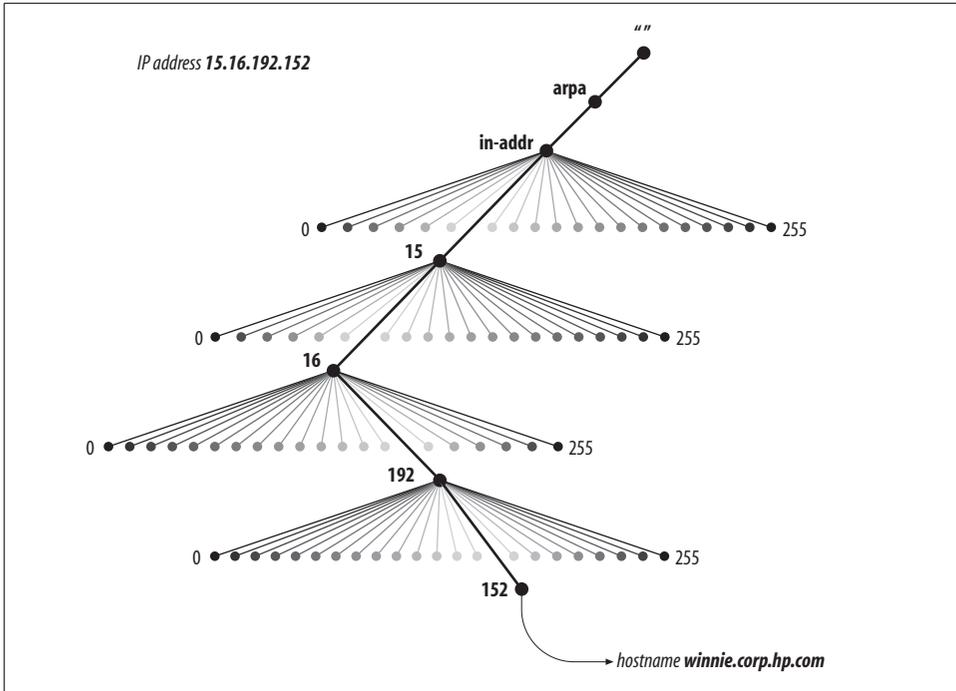


Figure 2-14. The *in-addr.arpa* domain

IP addresses could have been represented the opposite way in the namespace, with the first octet of the IP address at the bottom of the *in-addr.arpa* domain. That way, the IP address would have read correctly (forward) in the domain name. IP addresses are hierarchical, however, just like domain names. Network numbers are doled out much as domain names are, and administrators can then subnet their address space and further delegate numbering. The difference is that IP addresses get more specific from left to right, while domain names get less specific from left to right. Figure 2-15 shows what we mean.

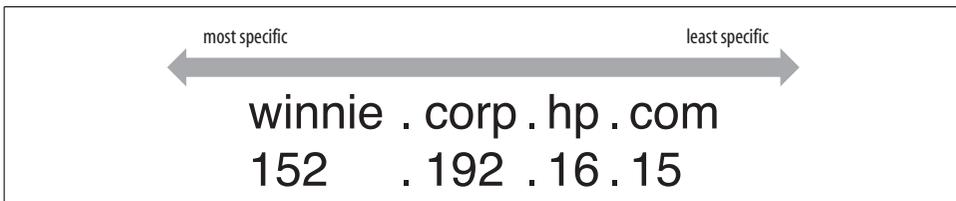


Figure 2-15. Hierarchical names and addresses

Making the first octets in the IP address appear highest in the tree enables administrators to delegate authority for *in-addr.arpa* zones along network lines. For example, the *15.in-addr.arpa* zone, which contains the reverse-mapping information for all hosts

whose IP addresses start with 15, can be delegated to the administrators of network 15/8. This would be impossible if the octets appeared in the opposite order. If the IP addresses were represented the other way around, *15.in-addr.arpa* would consist of every host whose IP address *ended* with 15—not a practical zone to try to delegate.

Caching

The whole resolution process may seem awfully convoluted and cumbersome to someone accustomed to simple searches through the host table. Actually, though, it's usually quite fast. One of the features that speeds it up considerably is *caching*.

A nameserver processing a recursive query may have to send out quite a few queries to find an answer. However, it discovers a lot of information about the domain namespace as it does so. Each time it's referred to another list of nameservers, it learns that those nameservers are authoritative for some zone, and it learns the addresses of those servers. At the end of the resolution process, when it finally finds the data the original querier sought, it can store that data for future reference, too. The BIND nameserver even implements *negative caching*: if a nameserver responds to a query with an answer that says the domain name or data type in the query doesn't exist, the local nameserver will also temporarily cache that information.

Nameservers cache all this data to help speed up successive queries. The next time a resolver queries the nameserver for data about a domain name the nameserver knows something about, the process is shortened quite a bit. The nameserver may have cached the answer, positive or negative, in which case it simply returns the answer to the resolver. Even if it doesn't have the answer cached, it may have learned the identities of the nameservers that are authoritative for the zone the domain name is in and be able to query them directly.

For example, say our nameserver has already looked up the address of *eecs.berkeley.edu*. In the process, it cached the names and addresses of the *eecs.berkeley.edu* and *berkeley.edu* nameservers (plus *eecs.berkeley.edu*'s IP address). Now if a resolver were to query our nameserver for the address of *baobab.cs.berkeley.edu*, our nameserver could skip querying the root nameservers. Recognizing that *berkeley.edu* is the closest ancestor of *baobab.cs.berkeley.edu* that it knows about, our nameserver would start by querying a *berkeley.edu* nameserver, as shown in Figure 2-16. On the other hand, if our nameserver discovered that there was no address for *eecs.berkeley.edu*, the next time it received a query for the address, it could simply respond appropriately from its cache.

In addition to speeding up resolution, caching obviates a nameserver's need to query the root nameservers to answer any queries it can't answer locally. This means it's not as dependent on the roots, and the roots won't suffer as much from all its queries.

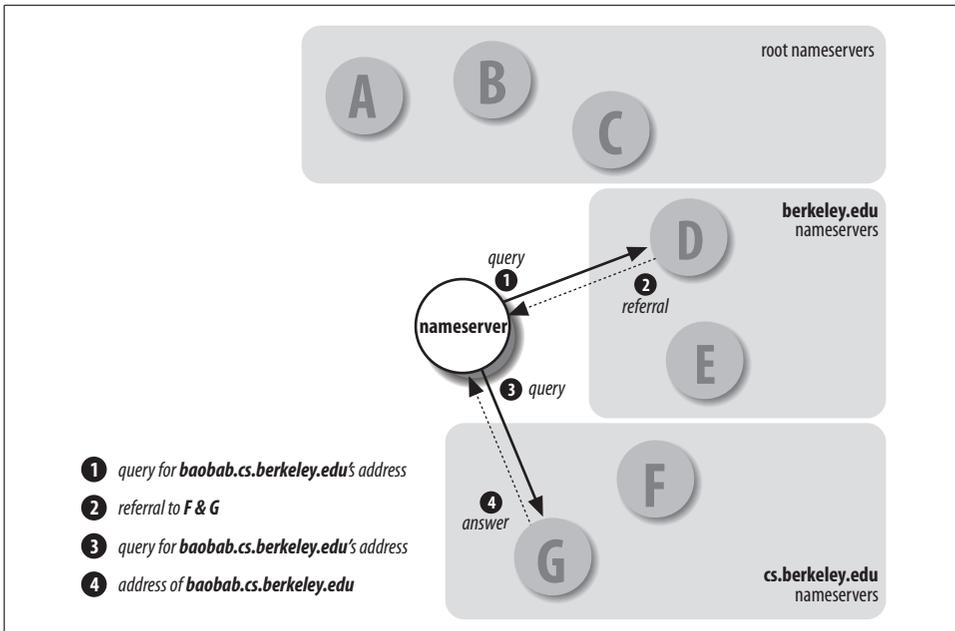


Figure 2-16. Resolving *baobab.cs.berkeley.edu*

Time to Live

Nameservers can't cache data forever, of course. If they did, changes to that data on the authoritative nameservers would never reach the rest of the network; remote nameservers would just continue to use cached data. Consequently, the administrator of the zone that contains the data decides on a *time to live* (TTL) for the data. The time to live is the amount of time that any nameserver is allowed to cache the data. After the time to live expires, the nameserver must discard the cached data and get new data from the authoritative nameservers. This also applies to negatively cached data: a nameserver must time out a negative answer after a period in case new data has been added on the authoritative nameservers.

Deciding on a time to live for your data is essentially deciding on a trade-off between performance and consistency. A small TTL helps ensure that data in your zones is consistent across the network, because remote nameservers will time it out more quickly and be forced to query your authoritative nameservers more often for new data. On the other hand, this increases the load on your nameservers and lengthens the average resolution time for information in your zones.

A large TTL reduces the average time it takes to resolve information in your zones because the data can be cached longer. The drawback is that your information will be inconsistent longer if you make changes to the data on your nameservers.

But enough of this theory—you're probably antsy to get on with things. There's some homework to do before you can set up your zones and nameservers, though, and we'll assign it in the next chapter.

Advanced Features

*“What’s the use of their having names,” the Gnat said,
“if they won’t answer to them?”*

The latest BIND nameservers, versions 8.4.7 and 9.3.2, have *lots* of new features. Some of the most prominent introductions are support for dynamic updates, asynchronous zone change notification (called “NOTIFY” for short), and incremental zone transfer. Of the rest, the most important are related to security: they let you tell your nameserver whom to answer queries from, whom to serve zone transfers to, and whom to permit dynamic updates from. Many of the security features aren’t necessary inside a corporate network, but the other mechanisms will help out administrators of any nameservers.

In this chapter, we’ll cover these features and suggest how they might come in handy in your DNS infrastructure. (We do save some of the hardcore firewall material ’til the next chapter, though.)

Address Match Lists and ACLs

Before we introduce the new features, however, we’d better cover address match lists. BIND 8 and 9 use address match lists for nearly every security feature and for some features that aren’t security-related at all.

An *address match list* is a list (what else?) of terms that specifies one or more IP addresses. The elements in the list can be individual IP addresses, IP prefixes, or a named address match list (more on those shortly).^{*} An IP prefix has the format:

network in dotted-octet format/bits in netmask

For example, the network 15.0.0.0 with the network mask 255.0.0.0 (eight contiguous ones) is written 15/8. Traditionally, this would have been thought of as the

^{*} And if you’re running a BIND 9 nameserver or BIND 8 from version 8.3.0 on, address match lists can include IPv6 addresses and IPv6 prefixes. These are described later in the chapter.

“class A” network 15. The network consisting of IP addresses 192.168.1.192 through 192.168.1.255, on the other hand, would be written 192.168.1.192/26 (network 192.168.1.192 with the netmask 255.255.255.192, which has 26 contiguous ones). Here’s an address match list comprising those two networks:

```
15/8; 192.168.1.192/26;
```

A named address match list is just that: an address match list with a name. To be used within another address match list, a named address match list must have been previously defined in *named.conf* with an *acl* statement. The *acl* statement has a simple syntax:

```
acl name { address_match_list; };
```

This just makes the name equivalent to that address match list from now on. Although the name of the statement, *acl*, suggests “access control list,” you can use the named address match list anywhere an address match list is accepted, including some places that don’t have anything to do with access control.

Whenever you use one or more of the same terms in a few access control lists, it’s a good idea to use an *acl* statement to associate them with a name. You can then refer to the name in the address match list. For example, let’s call 15/8 what it is: “HP-NET.” And we’ll call 192.168.1.192/26 “internal”:

```
acl "HP-NET" { 15/8; };  
  
acl "internal" { 192.168.1.192/26; };
```

Now we can refer to these address match lists by name in other address match lists. This not only cuts down on typing and simplifies managing your address match lists, it makes the resulting *named.conf* file more readable.

We prudently enclosed the names of our ACLs in quotes to avoid collisions with words BIND reserves for its own use. If you’re sure your ACL names don’t conflict with reserved words, you don’t need the quotes.

There are four predefined named address match lists:

none

No IP addresses

any

All IP addresses

localhost

Any of the IP addresses of the local host (i.e., the one running the nameserver)

localnets

Any of the networks the local host has a network interface on (found by using each network interface’s IP address and using the netmask to mask off the host bits in the address)

DNS Dynamic Update

The world of the Internet—and of TCP/IP networking in general—has become a much more dynamic place. Most large corporations use DHCP to control IP address assignment. Nearly all ISPs assign addresses to dial-up and cable modem customers using DHCP. To keep up, DNS needed to support the dynamic addition and deletion of records. RFC 2136 introduced this mechanism, called DNS Dynamic Update.

BIND 8 and 9 support the dynamic update facility described in RFC 2136. This permits authorized updaters to add and delete resource records from a zone for which a nameserver is authoritative. An updater can find the authoritative nameservers for a zone by retrieving the zone’s NS records. If the nameserver receiving an authorized update message is not the primary master for the zone, it forwards the update “upstream” to its master server, a process referred to as *update forwarding*. If this next server, in turn, is a slave for the zone, it also forwards the update upstream. Only the primary nameserver for a zone, after all, has a writable copy of the zone data; all the slaves get their copies of the zone data from the primary, either directly or indirectly (through other slaves). Once the primary has processed the dynamic update and modified the zone, the slaves can get a new copy of it via zone transfers.

Dynamic update permits more than the simple addition and deletion of records. Updaters can add or delete individual resource records, delete RRsets (a set of resource records with the same domain name, class, and type, such as all the addresses of *www.movie.edu*), or even delete all records associated with a given domain name. An update can also stipulate that certain records exist or not exist in the zone as a prerequisite to the update’s taking effect. For example, an update can add the address record:

```
armageddon.fx.movie.edu. 300 IN A 192.253.253.15
```

only if the domain name *armageddon.fx.movie.edu* isn’t currently being used or only if *armageddon.fx.movie.edu* currently has no address records.



A note on update forwarding: BIND nameservers didn’t implement update forwarding before 9.1.0, so it’s particularly important when using BIND nameservers older than 9.1.0 that you make sure the update is sent directly to the primary nameserver for the zone you’re trying to update. You can do this by ensuring that the primary nameserver for the zone is listed in the MNAME field of the zone’s SOA record. Most dynamic update routines use the MNAME field as a hint to tell them which authoritative nameserver to send the update to.

For the most part, dynamic update functionality is used by programs such as DHCP servers that assign IP addresses automatically to computers and then need to register the resulting name-to-address and address-to-name mappings. Some of these programs use

the new *ns_update()* resolver routine to create update messages and send them to an authoritative server for the zone that contains the domain name.

It's also possible to create updates manually with the command-line program *nsupdate*, which is part of the standard BIND distribution. *nsupdate* reads one-line commands and translates them into an update message. Commands can be specified on standard input (the default) or in a file, whose name must be given as an argument to *nsupdate*. Commands not separated by a blank line are incorporated into the same update message, as long as there's room.

nsupdate understands the following commands:

prereq yxrrset domain name type [rdata]

Makes the existence of an RRset of type *type* owned by *domain name* a prerequisite for performing the update specified in successive *update* commands. If *rdata* is specified, it must also match.

prereq nxrrset domain name type

Makes the nonexistence of an RRset of type *type* owned by *domain name* a prerequisite for performing the update specified.

prereq yxdomain domain name

Makes the existence of the specified domain name a prerequisite for performing the update.

prereq nxdomain domain name

Makes the nonexistence of the specified domain name a prerequisite for performing the update.

update delete domain name [type] [rdata]

Deletes the domain name specified or, if *type* is also specified, deletes the RRset specified or, if *rdata* is also specified, deletes the record matching *domainname*, *type*, and *rdata*.

update add domain name ttl [class] type rdata

Adds the record specified to the zone. Note that the TTL, in addition to the type and resource record-specific data, must be included, but the class is optional and defaults to IN.

So, for example, the command:

```
% nsupdate
> prereq nxdomain mib.fx.movie.edu.
> update add mib.fx.movie.edu. 300 A 192.253.253.16
> send
```

tells the server to add an address for *mib.fx.movie.edu* only if the domain name does not already exist. Note that BIND 8 versions of *nsupdate* before 8.4.5 use a blank line as a cue to send the update instead of the *send* command. Subtle, eh?

The following command checks to see whether *mib.fx.movie.edu* already has MX records and, if it does, deletes them and adds two in their place:

```
% nsupdate
> prereq yxrrset mib.fx.movie.edu. MX
> update delete mib.fx.movie.edu. MX
> update add mib.fx.movie.edu. 600 MX 10 mib.fx.movie.edu.
> update add mib.fx.movie.edu. 600 MX 50 postmanrings2x.movie.edu.
> send
```

As with queries, the nameservers that process dynamic updates answer them with DNS messages that indicate whether the update was successful and, if not, what went wrong. Updates may fail for many reasons: for example, because the nameserver wasn't actually authoritative for the zone being updated, because a prerequisite wasn't satisfied, or because the updater wasn't allowed.

There are some limitations to what you can do with dynamic update: you can't delete a zone entirely (though you can delete everything in it except the SOA record and one NS record), and you can't add new zones.

Dynamic Update and Serial Numbers

When a nameserver processes a dynamic update, it's changing a zone and must increment that zone's serial number to signal the change to the zone's slaves. This is done automatically. However, the nameserver doesn't necessarily increment the serial number for each dynamic update.

BIND 8 nameservers defer updating a zone's serial number for as long as 5 minutes or 100 updates, whichever comes first. The deferral is intended to deal with a mismatch between a nameserver's ability to process dynamic updates and its ability to transfer zones: the latter may take significantly longer for large zones. When the nameserver does finally increment the zone's serial number, it sends a NOTIFY announcement (described later in this chapter) to tell the zone's slaves that the serial number has changed.

BIND 9 nameservers update the serial number once for each dynamic update that is processed.

Dynamic Update and Zone Datafiles

Since a dynamic update makes a permanent change to a zone, a record of it needs to be kept on disk. But rewriting a zone datafile each time a record is added to or deleted from the zone can be prohibitively onerous for a nameserver. Writing a zone datafile takes time, and the nameserver could conceivably receive tens or hundreds of dynamic updates each second.

Instead, when they receive dynamic updates, both BIND 8 and 9 nameservers simply append a short record of the update to a logfile.* The change takes effect immediately in the copy of the zone the nameservers maintain in memory, of course. But the nameservers can wait and write the entire zone to disk only at a designated interval (hourly, usually). BIND 8 nameservers then delete the logfile because it's no longer needed. (At that point, the copy of the zone in memory is the same as that on disk.) BIND 9 nameservers, however, leave the logfile because they also use it for incremental zone transfers, which we'll cover later in this chapter. (BIND 8 nameservers keep incremental zone transfer information in another file.)

On BIND 8 nameservers, the name of the logfile is constructed by appending *.log* to the name of the zone datafile. On BIND 9 nameservers, the name of the logfile—also called a *journal file*—is the name of the zone datafile concatenated with *.jnl*. So when you start using dynamic update, don't be surprised to see these files appear alongside your zone datafiles: it's totally normal.

On a BIND 8 nameserver, the logfiles should disappear hourly (though they may reappear very quickly if your nameserver receives lots of updates) as well as when the nameserver exits gracefully. On a BIND 9 nameserver, the logfiles won't disappear at all. Both nameservers incorporate the record of the changes in the logfile into the zone if the logfile exists when the nameserver starts.

In case you're interested, BIND 8's logfiles are human-readable and contain entries like this:

```
;BIND LOG V8
[DYNAMIC_UPDATE] id 8761 from [192.249.249.3].1148 at 971389102 (named pid 17602):
zone:   origin movie.edu class IN serial 2000010957
update: {add} almostfamous.movie.edu. 600 IN A 192.249.249.215
```

BIND 9's logfiles, unfortunately, aren't human-readable. Well, not to these humans, anyway.

Update Access Control Lists

Given the fearsome control that dynamic updates obviously give an updater over a zone, you clearly need to restrict them, if you use them at all. By default, neither BIND 8 nor BIND 9 nameservers allow dynamic updates to authoritative zones. In order to use dynamic updates, you add an *allow-update* or *update-policy* substatement to the *zone* statement of the zone that you'd like to allow updates to.

* This idea will seem familiar to anyone who's ever used a journaling filesystem.

allow-update takes an address match list as an argument. The address or addresses matched by the list are the only addresses allowed to update the zone. It's prudent to make this access control list as restrictive as possible:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    allow-update { 192.253.253.100; }; // just our DHCP server
};
```

An updater authorized using *allow-update* can make any change to the zone: delete any record (except the SOA record) or add any records.

TSIG-Signed Updates

Given that BIND 9.1.0 and later slave nameservers can forward updates, what's the use of an IP address–based access control list? If the primary nameserver allows updates from its slaves' addresses, then any forwarded update is allowed, regardless of the original sender. That's not good.*

Well, first, you can control which updates are forwarded. The *allow-update-forwarding* substatement takes an address match list as an argument. Only updates from IP addresses that match the address match list will be forwarded. So the following *zone* statement forwards only those updates from the Special Effects Department's subnet:

```
zone "fx.movie.edu" {
    type slave;
    file "bak.fx.movie.edu";
    allow-update-forwarding { 192.253.254/24; };
};
```

Still, when you use update forwarding, you should also use transaction signatures (TSIG)–signed dynamic updates. We won't cover TSIG in depth until Chapter 11, but all you need to know for now is that TSIG-signed dynamic updates bear the cryptographic signature of the signer. If they're forwarded, the signature is forwarded with them. The signature, when verified, tells you the name of the key used to sign the update. The name of the key looks like a domain name, and it's often just the domain name of the host the key is installed on.

With BIND 8.2 and later nameservers, an address match list can include the name of one or more TSIG keys:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
```

* BIND 9.1.0 and later nameservers go so far as to warn you that IP address–based access control lists are insecure if you try to use them.

```

allow-update { key dhcp-server.fx.movie.edu.; }; // allow only updates
                                                    // signed by the DHCP
                                                    // server's TSIG key
};

```

This allows an updater who signs an update with the TSIG key *dhcp-server.fx.movie.edu* to make any change to the *fx.movie.edu* zone. Unfortunately, there's no way to further restrict the updater with that TSIG key to a list of source IP addresses.

BIND 9 supports a finer-grained access control mechanism than *allow-update*, also based on TSIG signatures. This mechanism uses the new *update-policy zone* substatement. *update-policy* lets you specify which keys are allowed to update which records in the zone. It's meaningful only for primary nameservers because the slaves are expected to forward the updates.

The update is specified by the name of the key used to sign it and by the domain name and type of records it attempts to update. *update-policy*'s syntax looks like the following:

```
(grant | deny) identity nametype string [types]
```

grant and *deny* have the obvious meanings: allow or disallow the specified dynamic update. *identity* refers to the name of the TSIG key used to sign the update. *name-type* is one of:

name

Matches when the domain name being updated is the same as the string specified in the *string* field.

subdomain

Matches when the domain name being updated is a subdomain of (i.e., ends in) the string specified in the *string* field. (The domain name must still be in the zone, of course.)

wildcard

Matches when the domain name being updated matches the wildcard expression specified in the *string* field.

self

Matches when the domain name being updated is the same as the name in the *identity* (not *string*!) field—that is, when the domain name being updated is the same as the name of the key used to sign the update. If *nametype* is *self*, the *string* field is ignored. And even though it looks redundant (as we'll see in the example in a moment), you still have to include the *string* field when using a *nametype* of *self*.

string, naturally, is a domain name appropriate to the *nametype* specified. For example, if you specify *wildcard* as the *nametype*, the *string* field should contain a wildcard label.

The *types* field is optional and can contain any valid record type (or multiple types, separated by spaces) except NSEC. (ANY is a convenient shorthand for “all types but NSEC.”) If you leave *types* out, it matches all record types except SOA, NS, RRSIG, and NSEC.



A note on the precedence of *update-policy* rules: the first match (not the closest match) in an *update-policy* substatement is the one that applies to a dynamic update.

So, if the host *mummy.fx.movie.edu* uses a key called *mummy.fx.movie.edu* to sign its dynamic updates, we can restrict *mummy.fx.movie.edu* to updating its own records with the following:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    update-policy { grant mummy.fx.movie.edu. self mummy.fx.movie.edu. };
};
```

or just its own address records with this:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    update-policy { grant mummy.fx.movie.edu. self mummy.fx.movie.edu. A; };
};
```

More generally, we can restrict all our clients to updating only their own address records using:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    update-policy { grant *.fx.movie.edu. self fx.movie.edu. A; };
};
```

We can allow our DHCP server to use the key *dhcp-server.fx.movie.edu* to update any A, TXT, and PTR records attached to domain names in *fx.movie.edu* with:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    update-policy {
        grant dhcp-server.fx.movie.edu. wildcard *.fx.movie.edu. A TXT PTR;
    };
};
```

In case you're wondering, the difference between:

```
grant dhcp-server.fx.movie.edu. subdomain fx.movie.edu.
```

and:

```
grant dhcp-server.fx.movie.edu. wildcard *.fx.movie.edu.
```

is that the former allows the key *dhcp-server.fx.movie.edu* to modify records attached to *fx.movie.edu* (for example, the zone's NS records) while the latter doesn't. Since the DHCP server has no business modifying any records attached to the domain name of the zone, the second is the more secure option.

Here's a more complicated example: to enable all clients to change any records, except SRV records, that are owned by the same domain name as their key name, but to allow *matrix.fx.movie.edu* to update SRV, A, and CNAME records associated with Active Directory (in the *_udp.fx.movie.edu*, *_tcp.fx.movie.edu*, *_sites.fx.movie.edu*, and *_msdcs.fx.movie.edu* subdomains), you can use:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    update-policy {
        grant matrix.fx.movie.edu. subdomain _udp.fx.movie.edu. SRV CNAME A;
        grant matrix.fx.movie.edu. subdomain _tcp.fx.movie.edu. SRV CNAME A;
        grant matrix.fx.movie.edu. subdomain _sites.fx.movie.edu. SRV CNAME A;
        grant matrix.fx.movie.edu. subdomain _msdcs.fx.movie.edu. SRV CNAME A;
        deny *.fx.movie.edu. self *.fx.movie.edu. SRV;
        grant *.fx.movie.edu. self *.fx.movie.edu. ANY;
    };
};
```

Since the rules in the *update-policy* substatement are evaluated in the order in which they appear, clients can't update their SRV records, though they can update any other record types they own.

If you'd like to take advantage of TSIG-signed dynamic updates but don't have any software that can send them, you can use newer versions of *nsupdate*; see Chapter 11 for that.

DNS NOTIFY (Zone Change Notification)

Traditionally, BIND slaves have used a polling scheme to determine when they need a zone transfer. The polling interval is called the *refresh interval*. Other parameters in the zone's SOA record govern other aspects of the polling mechanism.

But with this polling scheme, it can take up to the refresh interval before a slave detects and transfers new zone data from its master nameserver. That kind of latency can wreak havoc in a dynamically updated environment. Wouldn't it be nice if the primary nameserver could tell its slave servers when the information in the zone changed? After all, the primary nameserver knows the data has changed; someone reloaded the data or it received and processed a dynamic update. The primary could

send notification right after processing the reload or update instead of waiting for the refresh interval to pass.*

RFC 1996 proposed a mechanism that would allow primary nameservers to notify their slaves of changes to a zone's data. BIND 8 and 9 implement this scheme, which is called DNS NOTIFY.

DNS NOTIFY works like this: when a primary nameserver notices that the serial number of a zone has changed, it sends a special announcement to all the slave nameservers for that zone. The primary nameserver determines which servers are the slaves for the zone by looking at the list of NS records in the zone and taking out the record that points to the nameserver listed in the MNAME field of the zone's SOA record as well as the domain name of the local host.

When does the nameserver notice a change? Restarting a primary nameserver causes it to notify all its slaves as to the current serial number of all of its zones because the primary has no way of knowing whether its zone datafiles were edited before it started. Reloading one or more zones with new serial numbers causes a nameserver to notify the slaves of those zones. And a dynamic update that causes a zone's serial number to increment also causes notification.

The special NOTIFY announcement is identified by its opcode in the DNS header. The opcode for most queries is QUERY. NOTIFY messages, including announcements and responses, have a special opcode, NOTIFY (duh). Other than that, NOTIFY messages look very much like a response to a query for a zone's SOA record: they include the SOA record of the zone whose serial number has changed, and the authoritative answer bit is set.

When a slave receives a NOTIFY announcement for a zone from one of its configured master nameservers, it responds with a NOTIFY response. The response tells the master that the slave received the NOTIFY announcement so that the master can stop sending it NOTIFY announcements for the zone. The slave then proceeds just as if the refresh timer for that zone had expired: it queries the master nameserver for the SOA record for the zone that the master claims has changed. If the serial number is higher, the slave transfers the zone.

Why doesn't the slave simply take the master's word that the zone has changed? It's possible that a miscreant could forge NOTIFY announcements to slaves, causing lots of unnecessary zone transfers and amounting to a denial-of-service attack against a master nameserver.

If the slave actually transfers the zone, RFC 1996 says that it should issue its own NOTIFY announcements to the other authoritative nameservers for the zone. The

* Actually, in the case of reloading a zone, the nameserver may not send the NOTIFY messages right away. To avoid causing a flurry of refresh queries from slaves, BIND nameservers reloading zones wait a fraction of each zone's refresh interval before sending NOTIFY messages for that zone.

idea is that the primary master may not be able to notify all the slave nameservers for the zone itself because it's possible some slaves can't communicate directly with the primary (they use another slave as their master). However, while BIND 8.2.3 and later and all BIND 9 nameservers implement this, earlier versions of BIND 8 don't. Older BIND 8 slaves don't send NOTIFY messages unless explicitly configured to do so.

Here's how that works in practice. On our network, *toystory.movie.edu* is the primary nameserver for *movie.edu*, and *wormhole.movie.edu* and *zardoz.movie.edu* are slaves, as shown in Figure 10-1.

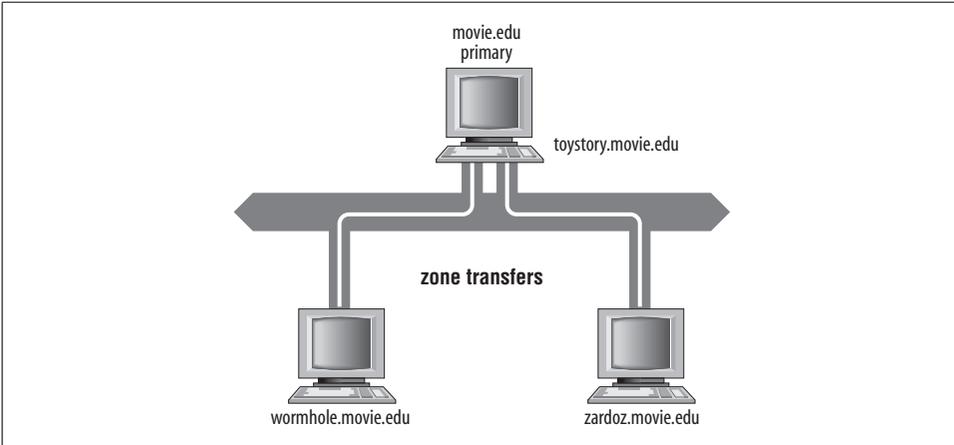


Figure 10-1. *movie.edu* zone transfers

When we edit and reload or dynamically update *movie.edu* on *toystory.movie.edu*, *toystory.movie.edu* sends NOTIFY announcements to *wormhole.movie.edu* and *zardoz.movie.edu*. Both slaves respond to *toystory.movie.edu*, telling it that they've received the notification. They then check to see whether *movie.edu*'s serial number has incremented and, when they find it has, perform a zone transfer. If *wormhole.movie.edu* and *zardoz.movie.edu* are running BIND 8.2.3 or later or BIND 9, after they transfer the new version of the zone, they also send NOTIFY announcements to tell each other about the change. But since *wormhole.movie.edu* isn't *zardoz.movie.edu*'s master nameserver for *movie.edu*, and the converse isn't true either, both slaves just ignore each other's NOTIFY announcements.

BIND nameservers log information about NOTIFY messages to *syslog*. Here's what BIND 8 running on *toystory.movie.edu* logged after we reloaded *movie.edu*:

```
Oct 14 22:56:34 toystory named[18764]: Sent NOTIFY for "movie.edu IN SOA 2000010958"
(movie.edu); 2 NS, 2 A
Oct 14 22:56:34 toystory named[18764]: Received NOTIFY answer (AA) from 192.249.249.1
for "movie.edu IN SOA"
Oct 14 22:56:34 toystory named[18764]: Received NOTIFY answer (AA) from 192.249.249.9
for "movie.edu IN SOA"
```

The first message shows us the NOTIFY announcement that *toystory.movie.edu* sent, informing the two slaves (2 NS) that the serial number of *movie.edu* is now 2000010958. The next two lines show the slave nameservers confirming their receipt of the notification.

A BIND 9 nameserver would have logged just:

```
Oct 14 22:56:34 toystory named[18764]: zone movie.edu/IN: sending notifies (serial 2000010958)
```

Let's also look at a more complicated zone transfer scheme. In Figure 10-2, *a* is the primary nameserver for the zone and *b*'s master server, but *b* is *c*'s master server. Moreover, *b* has two network interfaces.

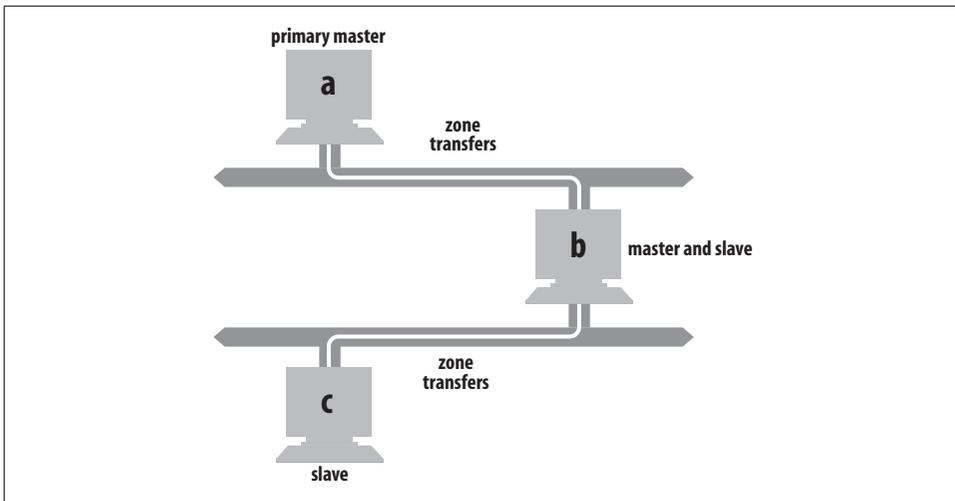


Figure 10-2. Complex zone transfer example

In this scenario, *a* notifies both *b* and *c* after the zone is updated. Then *b* checks to see whether the zone's serial number has incremented and initiates a zone transfer. However, *c* ignores *a*'s NOTIFY announcement because *a* is not *c*'s configured master nameserver (*b* is). If *b* is running BIND 8.2.3 or later, or BIND 9, or is explicitly configured to notify *c*, then after *b*'s zone transfer completes, it sends a NOTIFY announcement to *c*, which prompts *c* to check the serial number *b* holds for the zone. If *c* is also running BIND 8.2.3 or later or BIND 9, it sends *b* a NOTIFY announcement after its zone transfer finishes, which *b*, naturally, ignores.

Note also that if there's any possibility that *c* will receive a NOTIFY announcement from *b*'s other network interface, *c* must be configured with both network interfaces' addresses in the zone's *masters* substatement, or else *c* will ignore NOTIFY announcements from the unknown interface.

BIND 4 slave nameservers and other nameservers that don't support NOTIFY will respond with a Not Implemented (NOTIMP) error. Note that the Microsoft DNS Server *does* support DNS NOTIFY.

In both BIND 8 and 9, DNS NOTIFY is on by default, but you can turn off NOTIFY globally with the substatement:

```
options {
    notify no;
};
```

You can also turn on or off NOTIFY for a particular zone. For example, say we know that all the slave nameservers for our *fx.movie.edu* zone are running BIND 4 and therefore don't understand NOTIFY announcements. The *zone* statement:

```
zone "fx.movie.edu" {
    type master;
    file "db.fx.movie.edu";
    notify no;
};
```

avoids sending useless NOTIFY announcements to the slaves for *fx.movie.edu*. A zone-specific NOTIFY setting overrides any global setting for that zone. Unfortunately, neither BIND 8 nor BIND 9 allows you to turn off NOTIFY announcements on a server-by-server basis.

BIND 8 and 9 even have a provision for adding servers besides those in your zone's NS records to your "NOTIFY list." For example, you may have one or more unregistered slave nameservers (described in Chapter 8), and you'd like them to pick up changes to the zone quickly. Or you may have an older BIND 8 slave for the zone that is the master server for another slave and needs to send NOTIFY messages to the slave.

To add a server to your NOTIFY list, use the *also-notify* substatement of the *zone* statement:

```
zone "fx.movie.edu" {
    type slave;
    file "bak.fx.movie.edu";
    notify yes;
    also-notify { 15.255.152.4; }; // This is a BIND 8 slave, which
                                // must be explicitly configured
                                // to notify its slave
};
```

In BIND 8.2.2 and later nameservers, you can specify *also-notify* as an *options* substatement as well. This applies to all zones for which NOTIFY is on (and which don't have their own *also-notify* substatements).

Beginning in BIND 8.3.2 and 9.1.0, you can specify *explicit* as an argument to the *notify* substatement; this suppresses NOTIFY messages to all nameservers except

those in the *also-notify* list. For example, these two substatements tell the nameserver to send NOTIFY messages only to the slave at 192.249.249.20:

```
options {
    also-notify { 192.249.249.20; };
    notify explicit;
};
```

You can also use the *allow-notify* substatement to tell your nameserver to accept NOTIFY messages from nameservers other than just the configured master nameservers for a zone:

```
options {
    allow-notify { 192.249.249.17; }; // let 192.249.249.17 send NOTIFY msgs
};
```

As an *options* substatement, *allow-notify* affects all slave zones. When specified as a *zone* substatement, *allow-notify* overrides any global *allow-notify* for just that zone.

Incremental Zone Transfer (IXFR)

With dynamic update and NOTIFY, our zones are updated according to the changing state of the network, and those changes quickly propagate to all the authoritative nameservers for those zones. The picture's complete, right?

Not quite. Imagine you run a large zone that's dynamically updated with frightening frequency. That's easy to envision: you might have a big zone to begin with, including thousands of clients, when all of a sudden management decides to implement Active Directory and DHCP. Now each of your clients updates its own address record in the zone, and the Domain Controllers update the records that tell clients which services they run. (There's much more to come on Active Directory in Chapter 17.)

Each time your primary nameserver receives an update that increments the zone's serial number, it sends a NOTIFY announcement to its slaves. And each time they receive NOTIFY announcements, the slaves check the serial number of the zone on their master server and, possibly, transfer the zone. If that zone is large, the transfer will take some time; another update could arrive in the interim. Your slaves could be transferring zones in perpetuity! At the very least, your nameservers will spend a lot of time transferring the whole zone when the change to the zone is probably very small (e.g., the addition of a client's address record).

Incremental zone transfer, or IXFR for short, solves this problem by allowing slave nameservers to tell their master servers which version of a zone they currently hold and to request just the changes to the zone between that version and the current one. This can dramatically reduce the size and duration of a zone transfer.

An incremental zone transfer request has a query type of IXFR instead of AXFR (the type of query that initiates a full zone transfer), and it contains the slave's current

SOA record from the zone in the authority section of the message. When the master nameserver receives an incremental zone transfer request, it looks for the record of the changes to the zone between the slave's version of the zone and the version the master holds. If that record is missing, the master sends a full zone transfer. Otherwise, it sends just the differences between the versions of the zone.

IXFR Limitations

Sound good? It is! But IXFR has a few limitations that you should know about. First, IXFR didn't work well until BIND 8.2.3. All BIND 9 nameservers have IXFR implementations that work well and interoperate with BIND 8.2.3.

Next, IXFR traditionally has worked only when you're modifying your zone data with dynamic updates, not by making manual changes. Dynamic updates leave a record of the changes made to the zone and the serial number changes they correspond to—exactly what a master nameserver needs to send to a slave that requests IXFR. But a nameserver that reloads an entire zone datafile would have to compute the differences between that zone and the previous zone, like doing a *diff* between the versions. This meant that, to take maximum advantage of IXFR, you needed to modify your zone only by using dynamic update, and never edit the zone datafile by hand.

IXFR from Differences

BIND 9.3.0 introduced support for calculating IXFR responses by comparing a zone datafile with the version of the zone it has in memory. This means that you can now (or again) edit zone datafiles manually. You do have to take precautions, however, to make sure the file you're editing contains the latest version of the zone and dynamic updates are refused while you're working on the file. (Dynamic updates could change the in-memory version of the zone so that the file no longer reflected its state.)

To turn on this feature, use the *ixfr-from-differences* substatement. You can use it within an *options* or *zone* statement. Here's how you would turn on the feature for all zones:

```
options {
    directory "/var/named";
    ixfr-from-differences yes;
};
```

To force the nameserver to write a new version of a zone's datafile and suspend processing of dynamic updates to the zone, use *rndc*'s new *freeze* command:

```
% rndc freeze zone [class [view]]
```

To tell the nameserver to reread the zone datafile and resume processing of dynamic updates for the zone, use *rndc thaw*:

```
% rndc thaw zone [class [view]]
```

You probably shouldn't keep a zone frozen for too long, especially if you might be missing important updates.

IXFR Files

BIND 8 nameservers maintain an IXFR log of changes to the zone separate from the dynamic update logfile. Like the dynamic update logfile, the IXFR logfile is updated every time the nameserver receives an update. Unlike the dynamic update logfile, the IXFR logfile is never deleted, though the nameserver can be configured to trim it when it exceeds a particular size. The name of the BIND 8 IXFR logfile, by default, is the name of the zone datafile with *.ixfr* appended to it.

BIND 9 nameservers use the dynamic update logfile, or *journal file*, to assemble IXFR responses and to maintain the integrity of the zone. Since a primary nameserver never knows when it may need the record of a particular change to the zone, it doesn't delete the journal file. A BIND 9 slave saves the journal file even if it receives an AXFR of the zone because it may serve as a master nameserver to one or more slaves, too.

BIND 8 IXFR Configuration

Configuring IXFR in BIND 8 is fairly straightforward. First, you need an *options* substatement called *maintain-ixfr-base* on your master nameserver that tells it to maintain IXFR logfiles for all zones—even those the nameserver is a slave for because those in turn may have slaves that want IXFRs:

```
options {
    directory "/var/named";
    maintain-ixfr-base yes;
};
```

You then need to tell your slaves to request IXFRs from that master nameserver. You do that with a new *server* substatement, *support-ixfr*:

```
server 192.249.249.3 {
    support-ixfr yes;
};
```

That's about it, unless you want to rename the IXFR logfile on the master. That's done with a new *zone* statement, *ixfr-base*:

```
zone "movie.edu" {
    type master;
    file "db.movie.edu";
    ixfr-base "ixfr.movie.edu";
};
```

Oh, and you can configure the nameserver to trim the IXFR logfile after it exceeds a particular size:*

```
options {
    directory "/var/named";
    maintain-ixfr-base yes;
    max-ixfr-log-size 1M;    // trim IXFR log to 1 megabyte
};
```

Once the IXFR logfile exceeds the specified limit by 100 KB, the nameserver trims it back to that size. The 100 KB of “slush” prevents the logfile from reaching the limit and then being trimmed back after each successive update.

Using the *many-answers* zone transfer format can make zone transfers even more efficient. We’ll cover *many-answers* zone transfers later in this chapter.

BIND 9 IXFR Configuration

It’s even easier to configure IXFR in a BIND 9 master nameserver because you don’t have to do a thing: it’s on by default. If you need to turn it off for a particular slave server (and you probably won’t because a slave must request an incremental zone transfer), use the *provide-ixfr server* substatement, which defaults to *yes*:

```
server 192.249.249.1 {
    provide-ixfr no;
};
```

You can also use *provide-ixfr* as an *options* substatement, in which case it applies to all slaves that don’t have an explicit *provide-ixfr* substatement of their own in a *server* statement.

Since BIND 9 master nameservers send *many-answers* zone transfers by default, you don’t need any special *transfer-format* configuration.

More useful is the *request-ixfr* substatement, which can be used in either an *options* or a *server* statement. If you have a mix of IXFR-capable and IXFR-impaired masters, you can tailor your slave’s zone transfer requests to match the capabilities of its masters:

```
options {
    directory "/var/named";
    request-ixfr no;
};

server 192.249.249.3 {
    request-ixfr yes;    // of our masters, only toystory supports IXFR
};
```

* Before BIND 8.2.3, you need to specify the number of bytes, rather than just “1M,” because of a bug.

From BIND 9.3.0 on, BIND 9 nameservers support configuring the maximum size of a journal file with the *max-journal-size options* substatement.

Forwarding

Certain network connections discourage sending large volumes of traffic off-site, perhaps because it's a slow link with high delay; a remote office's satellite connection to the company's network is an example. In these situations, you'll want to limit the off-site DNS traffic to the bare minimum. BIND provides a mechanism to do this: *forwarders*.

Forwarders are also useful if you need to shunt name resolution to a particular nameserver. For example, if only one of the hosts on your network has Internet connectivity, and you run a nameserver on that host, you can configure your other nameservers to use it as a forwarder so that they can look up Internet domain names. (More on this use of forwarders when we discuss firewalls in Chapter 11.)

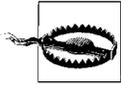
If you designate one or more servers at your site as forwarders, your nameservers will send all their off-site queries to the forwarders first. The idea is that the forwarders handle all the off-site queries generated at the site, building up a rich cache of information. For any given query in a remote zone, there is a high probability that the forwarder can answer the query from its cache, avoiding the need for the other servers to send queries off-site. You don't do anything to a nameserver to make it a forwarder; you modify all the *other* servers at your site to direct their queries through the forwarders.

A primary or slave nameserver's mode of operation changes slightly when it is configured to use a forwarder. If a resolver requests records that are already in the nameserver's authoritative data or cached data, the nameserver answers with that information; this part of its operation hasn't changed. However, if the records aren't in its database, the nameserver sends the query to a forwarder and waits a short period for an answer before resuming normal operation and starting the iterative name resolution process. This mode of operation is called *forward first*. What the nameserver is doing differently here is sending a *recursive* query to the forwarder, expecting it to find the answer. At all other times, the nameserver sends out only *nonrecursive* queries to other nameservers.

For example, here is the BIND 8 and 9 *forwarders* substatement for nameservers in *movie.edu*. Both *wormhole.movie.edu* and *toystory.movie.edu* are the site's forwarders. We add this *forwarders* substatement to every nameserver's configuration file except the ones for the forwarders themselves:

```
options {
    forwarders { 192.249.249.1; 192.249.249.3; };
};
```

When you use forwarders, try to keep your site configuration simple. You could end up with configurations that are really twisted.



Avoid chaining your forwarders. Don't configure nameserver A to forward to server B, and server B to forward to server C (or, worse yet, back to server A). This can cause long resolution delays and creates a brittle configuration, in which the failure of any forwarder in the chain impairs or breaks name resolution.

A More Restricted Nameserver

You may want to restrict your nameservers even further—stopping them from even *trying* to contact an off-site server if their forwarder is down or doesn't respond. You can do this by configuring your nameservers to use *forward-only* mode. A nameserver in forward-only mode is a variation on a nameserver that uses forwarders. It still answers queries from its authoritative data and cached data. However, it relies *completely* on its forwarders; it doesn't try to contact other nameservers to find information if the forwarders don't give it an answer. Here is an example of what the configuration file of a nameserver in forward-only mode would contain:

```
options {
    forwarders { 192.249.249.1; 192.249.249.3; };
    forward only;
};
```

If you use forward-only mode, you must have forwarders configured. Otherwise, it doesn't make sense to have forward-only mode set. If you configure a nameserver in forward-only mode and run a version of BIND older than 8.2.3, you might want to consider including the forwarders' IP addresses more than once. That would look like:

```
options {
    forwarders { 192.249.249.1; 192.249.249.3;
                192.249.249.1; 192.249.249.3; };
    forward only;
};
```

This nameserver contacts each forwarder only once, and it waits a short time for the forwarder to respond. Listing the forwarders multiple times directs the nameserver to *retransmit* queries to the forwarders and increases the overall length of time that the forward-only nameserver will wait for an answer from forwarders.



In our experience, forward-only mode actually provides more predictable name resolution than forward-first mode (which is the default). It takes so long for the queries to forwarders to time out that by the time the nameserver starts iterative name resolution, the resolver that sent the original query has often given up already or is on the verge of giving up. The result is that resolvers get inconsistent resolution results: Some queries, which resolve quickly, are answered, but others time out.

Forward Zones

Traditionally, using forwarders has been an all-or-nothing proposition: either you use forwarders to resolve every query your nameserver can't answer itself, or you don't use forwarders at all. However, there are some situations in which it would be nice to have more control over forwarding. For example, maybe you'd like to resolve certain domain names using a particular forwarder but resolve other domain names iteratively.

BIND 8.2 introduced a new feature, *forward zones*, that allows you to configure your nameserver to use forwarders only when looking up certain domain names. (BIND 9's support for forward zones was added in 9.1.0.) For example, you can configure your nameserver to shunt all queries for domain names ending in *pixar.com* to a pair of Pixar's nameservers:

```
zone "pixar.com" {
    type forward;
    forwarders { 138.72.10.20; 138.72.30.28; };
};
```

Why would you ever configure this explicitly rather than letting your nameserver follow delegation from the *com* nameservers to the *pixar.com* nameservers? Well, imagine that you have a private connection to Pixar, and you're told to use a special set of nameservers, reachable only from your network, to resolve all *pixar.com* domain names.

Even though forwarding rules are specified in the *zone* statement, they apply to all domain names that end in the domain name specified. That is, regardless of whether the domain name you're looking up, *foo.bar.pixar.com*, is in the *pixar.com* zone, the rule applies to it because it ends in *pixar.com* (or is in the *pixar.com* domain, if you prefer).

There's another variety of forward zone, in a way the opposite of the kind we just showed you. These allow you to specify which queries *don't* get forwarded. Therefore, it applies only to nameservers with forwarders specified in the *options* statement, which would normally apply to all queries.

These forward zones are configured using a *zone* statement, but not of type *forward*. Instead, these are normal zones—master, slave, or stub—with a *forwarders* substatement. To “undo” the forwarding configured in the *options* statement, we specify an empty list of forwarders:

```
options {
    directory "/var/named";
    forwarders { 192.249.249.3; 192.249.249.1; };
};

zone "movie.edu" {
    type slave;
    masters { 192.249.249.3; };
};
```

```
file "bak.movie.edu";
forwarders {};
};
```

Wait a minute—why would you need to disable forwarding in a zone you’re authoritative for? Wouldn’t you just answer the query and not use a forwarder?

Remember, the forwarding rules apply to queries for all domain names that end in the domain name of the zone. So this forwarding rule really applies only to queries for domain names in delegated subdomains of *movie.edu*, such as *fx.movie.edu*. Without the forwarding rule, this nameserver would have forwarded a query for *matrix.fx.movie.edu* to the nameservers at 192.249.249.3 and 192.249.249.1. With the forwarding rule, it instead uses the subdomain’s NS records from the *movie.edu* zone and queries the *fx.movie.edu* nameservers directly.

Forward zones are enormously helpful in dealing with Internet firewalls, as we’ll see in Chapter 11.

Forwarder Selection

On BIND 8 nameservers from 8.2.3 on, and BIND 9 nameservers from 9.3.0 on, you don’t need to list forwarders more than once. These nameservers don’t necessarily query the forwarders in the order listed; they interpret the nameservers in the list as “candidate” forwarders and choose which one to query first based on roundtrip time, the time it took to respond to previous queries.

This is a real benefit if a forwarder fails, especially the first one in the list. Older versions of BIND would keep blindly querying the failed forwarder and waiting before querying the next in the list. These newer versions of BIND quickly realize that the forwarder isn’t responding and will try another.

Views

BIND 9 introduced *views*, another mechanism that’s very useful in firewalled environments. Views allow you to present one nameserver configuration to one community of hosts and a different configuration to another community. This is particularly handy if you’re running a nameserver on a host that receives queries from both your internal hosts and hosts on the Internet (we’ll cover this in the next chapter).

If you don’t configure any views, BIND 9 automatically creates a single, implicit view that it shows to all hosts that query it. To explicitly create a view, you use the *view* statement, which takes the name of the view as an argument:

```
view "internal" {
};
```

Although the name of the view can be just about anything, using a descriptive name is always a good idea. And while quoting the name of the view isn't necessary, it's helpful to do so to avoid conflict with words BIND reserves for its own use ("internal," for example). The *view* statement must come after any *options* statement, though not necessarily right after it.

You can select which hosts "see" a particular view using the *match-clients view* substatement, which takes an address match list as an argument. If you don't specify a community of hosts with *match-clients*, the view applies to all hosts.

Let's say we're setting up a special view of the *fx.movie.edu* zone on our nameservers that we want only the Special Effects department to see. We could create a view visible only to hosts on our subnet:

```
view "internal" {
    match-clients { 192.253.254/24; };
};
```

If you want to make that a little more readable, you can use an *acl* statement:

```
acl "fx-subnet" { 192.253.254/24; };

view "internal" {
    match-clients { "fx-subnet"; };
};
```

Just be sure you define the ACL *outside* the view because you can't use *acl* statements inside views.

You can also specify who sees a view using the *match-destinations view* substatement, which, like *match-clients*, takes an address match list as an argument. *match-destinations* applies to nameservers with multiple IP addresses: clients querying one of a server's IP address, might see one view, while those querying another address see a different view. *match-clients* and *match-destinations* can be used in combination, too, to select queries from a particular client and those sent to a particular address. There's even a *match-recursive-only* Boolean substatement that will let you select only recursive or nonrecursive queries.

What can you put inside a *view* statement? Almost anything (well, except for *acl* statements). You can define zones with *zone* statements, describe remote nameservers with *server* statements, and configure TSIG keys with *key* statements. You can use most *options* substatements within a view, but if you do, don't enclose them in an *options* statement; just use them "raw" in the *view* statement:

```
acl "fx-subnet" { 192.253.254/24; };

view "internal" {
    match-clients { "fx-subnet"; };
    recursion yes; // turn recursion on for this view
                  // (it's off globally, in the options statement)
};
```

Any configuration option you specify within a view overrides the like-named global option (e.g., one in the *options* statement) for hosts that match *match-clients*.

For a complete list of what's supported inside the *view* statement on the version of BIND 9 you run (because it changes from release to release), see the file *doc/misc/options* in the BIND distribution.

To give you an idea of the power of views, here's the Special Effects lab's full *named.conf* file:

```
options {
    directory "/var/named";
};

acl "fx-subnet" { 192.253.254/24; };

view "internal" { // internal view of our zones

    match-clients { "fx-subnet"; };

    zone "fx.movie.edu" {
        type master;
        file "db.fx.movie.edu";
    };

    zone "254.253.192.in-addr.arpa" {
        type master;
        file "db.192.253.254";
    };
};

view "external" { // view of our zones for the rest of the world

    match-clients { any; }; // implicit
    recursion no;          // outside of our subnet, they shouldn't be
                           // requesting recursion

    zone "fx.movie.edu" {
        type master;
        file "db.fx.movie.edu.external"; // external zone datafile
    };

    zone "254.253.192.in-addr.arpa" {
        type master;
        file "db.192.253.254.external"; // external zone datafile
    };
};
```

Notice that each view has an *fx.movie.edu* and a *254.253.192.in-addr.arpa* zone, but the zone datafiles are different in the internal and external views. This allows us to show the outside world a different “face” than we see internally.

The order of the *view* statements is important because the first view that a host's IP address matches is the one that dictates what it sees. If the external view were listed

first in the configuration file, it would occlude the internal view because the external view matches all addresses.

One last note on views (before we use them in the next chapter, anyway): if you configure even one *view* statement, all your *zone* statements must appear within explicit views.

Round-Robin Load Distribution

Nameservers released since BIND 4.9 have formalized some load distribution functionality that has existed in patches to BIND for some time. Bryan Beecher wrote patches to BIND 4.8.3 to implement what he called “shuffle address records.” These were address records of a special type that the nameserver rotated between responses. For example, if the domain name *foo.bar.baz* had three “shuffled” IP addresses, 192.168.1.1, 192.168.1.2, and 192.168.1.3, an appropriately patched nameserver would give them out first in the order:

```
192.168.1.1 192.168.1.2 192.168.1.3
```

then in the order:

```
192.168.1.2 192.168.1.3 192.168.1.1
```

and then in the order:

```
192.168.1.3 192.168.1.1 192.168.1.2
```

before starting all over with the first order and repeating the rotation ad infinitum.

This functionality is enormously useful if you have a number of equivalent network resources, such as mirrored FTP servers, web servers, or terminal servers, and you’d like to spread the load among them. You establish one domain name that refers to the group of resources and configure clients to access that domain name, and the nameserver distributes requests among the IP addresses you list.

BIND 8 and 9 do away with the shuffle address record as a separate record type, subject to special handling. Instead, a modern nameserver rotates addresses for any domain name that has more than one A record. (In fact, the nameserver will rotate any type of record as long as a given domain name has more than one of them.)* So the records:

```
foo.bar.baz. 60 IN A 192.168.1.1
foo.bar.baz. 60 IN A 192.168.1.2
foo.bar.baz. 60 IN A 192.168.1.3
```

accomplish on a BIND 8 or 9 nameserver just what the shuffle address records did on a patched 4.8.3 server. The BIND documentation calls this process *round-robin*.

* Actually, until BIND 9, PTR records weren’t rotated. BIND 9 rotates all record types.

It's a good idea to reduce the records' time to live, too, as we did in this example. This ensures that if the addresses are cached on an intermediate nameserver that doesn't support round-robin, they'll time out of the cache quickly. If the intermediate nameserver looks up the name again, your authoritative nameserver can round-robin the addresses again.

Note that this is really load distribution, not load balancing, because the nameserver gives out the addresses in a completely deterministic way without regard to the actual load or capacity of the servers servicing the requests. In our example, the server at address 192.168.1.3 could be a 486DX33 running Linux and the other two servers HP9000 Superdomes, and the Linux box would still get a third of the queries. Listing a higher-capacity server's address multiple times won't help because BIND eliminates duplicate records.

Multiple CNAMEs

Back in the heyday of BIND 4 nameservers, some folks set up round-robin using multiple CNAME records instead of multiple address records:

```
foo1.bar.baz. 60 IN A 192.168.1.1
foo2.bar.baz. 60 IN A 192.168.1.2
foo3.bar.baz. 60 IN A 192.168.1.3
foo.bar.baz. 60 IN CNAME foo1.bar.baz.
foo.bar.baz. 60 IN CNAME foo2.bar.baz.
foo.bar.baz. 60 IN CNAME foo3.bar.baz.
```

This probably looks odd to those of you who are used to our harping on the evils of mixing anything with a CNAME record. But BIND 4 nameservers didn't recognize this as the configuration error it is and simply returned the CNAME records for *foo.bar.baz* in round-robin order.*

BIND 8 nameservers, on the other hand, are more vigilant and catch this error. You can, however, explicitly configure them to allow multiple CNAME records for a single domain name with:

```
options {
    multiple-cnames yes;
};
```

Not that we think you *should*, however.

BIND 9 nameservers don't notice the multiple CNAME problem until version 9.1.0. BIND versions from 9.1.0 on detect the problem but don't give you the option of allowing multiple CNAME records with the *multiple-cnames* statement. We think

* The right way to do this, in case you're wondering, is to attach the addresses of *foo1.bar.baz*, *foo2.bar.baz*, and *foo3.bar.baz* directly to the domain name *foo.bar.baz*.

that's the right approach: attaching multiple CNAME records to a single domain name is a violation of the DNS standards (in particular RFC 2181). Don't do it.

The *rrset-order* Substatement

There are certain times when you'd rather the nameserver didn't use round-robin. For example, maybe you'd like to designate one web server as a backup to another. To do this, the nameserver should always return the backup's address after the primary web server's address. But you can't do that with round-robin; it'll just rotate the order of the addresses in successive responses.

BIND 8.2 and later nameservers and BIND 9.3.0 and later nameservers allow you to turn off round-robin for certain domain names and types of records. For example, if we want to ensure that the address records for *www.movie.edu* are always returned in the same order, we'd use this *rrset-order* substatement:

```
options {
    rrset-order {
        class IN type A name "www.movie.edu" order fixed;
    };
};
```

We should probably lower the TTL on *www.movie.edu*'s address records, too, so a nameserver that cached the records wouldn't round-robin them for long.

The *class*, *type*, and *name* settings determine which records the specified order applies to. The class defaults to IN, type to ANY, and name to *—in other words, any records. So the statement:

```
options {
    rrset-order {
        order random;
    };
};
```

applies a random order to all records returned by the nameserver. The name setting may contain a wildcard as its leftmost label, as in:

```
options {
    rrset-order {
        type A name "*.movie.edu" order cyclic;
    };
};
```

Only one *rrset-order* substatement is permitted, but it can contain multiple order specifications. The first order specification to match a set of records in a response applies.

rrset-order supports three (count 'em, three!) different orders:

fixed

Always returns matching records in the same order

random

Returns matching records in random order

cyclic

Returns matching records in cyclic (round-robin) order

Unfortunately, BIND 9.3.2 doesn't yet support the *fixed* order completely.*

The default behavior is:

```
options {
    rrset-order {
        class IN type ANY name "*" order cyclic;
    };
};
```

Configuring *rrset-order* is far from a complete solution, unfortunately, because resolver and nameserver caching can interfere with its operation. A better long-term solution is the SRV record, which we'll discuss in Chapter 17.

Nameserver Address Sorting

Sometimes, neither round-robin nor any other configurable order is what you want. When you are contacting a host that has multiple network interfaces and hence multiple IP addresses, choosing a particular interface based on your host's address may give you better performance. No *rrset-order* substatement can do that for you.

If the multihomed host is local and shares a network or subnet with your host, one of the multihomed host's addresses is "closer." If the multihomed host is remote, you may see better performance using one interface instead of another, but often it doesn't matter much which address is used. In days long past, net 10 (the former ARPAnet "backbone") was always closer than any other remote address. The Internet has improved drastically since those days, so you won't often see a marked performance improvement when using one network over another for remote multihomed hosts, but we'll cover that case anyway.

Before we get into address sorting by a nameserver, you should first look at whether address sorting by the resolver better suits your needs. (See the section "The sortlist Directive" in Chapter 6.) Since your resolver and nameserver may be on different networks, it often makes more sense for the resolver to sort addresses optimally for its

* Fixed order works only if you happen to have your records in DNSSEC's sorted order. See Chapter 11 for details on DNSSEC's sorting.

host. Address sorting at the nameserver works fairly well, but it can be hard to optimize for every resolver it services.

In an uncommon turn of events, the nameserver's address-sorting feature was *removed* in early versions of BIND 8, primarily because of the developers' insistence that it had no place in the nameserver. The feature was restored—and in fact enhanced—in BIND 8.2. BIND 9.1.0 was the first BIND 9 release to support address sorting.

The key to address sorting is an *options* substatement called *sortlist*. The *sortlist* substatement takes an address match list as an argument. Unlike address match lists used as access control lists, though, *sortlist*'s has a very specialized interpretation. Each entry in the address match list is itself an address match list with either one or two elements.

If an entry has only one element, it's used to check the IP address of a querier. If the querier's address matches, then the nameserver sorts addresses in a response to that querier so that any addresses that match the element are first. Confusing? Here's an example:

```
options {
    sortlist {
        { 192.249.249/24; };
    };
};
```

The only entry in this sort list has just one element. This sort list sorts addresses on the network 192.249.249/24 to the beginning of responses to queriers that are also on that network. So if the client at 192.249.249.101 looks up a domain name that owns two addresses, 192.249.249.87 and 192.253.253.87, the nameserver will sort 192.249.249.87 to the beginning of the response.

If an entry has two elements, the first element is used to match the IP address of a querier. If the querier's address matches, the nameserver sorts addresses in a response to that querier so that any addresses that match the second element come first. The second element can actually be a whole address match list of several elements, in which case the first address added to the response is the one that matches first in the list. Here's a simple example:

```
options {
    sortlist {
        { 192.249.249/24; { 192.249.249/24; 192.253.253/24; }; };
    };
};
```

This sort list applies to queriers on 192.249.249/24 and sends them addresses on their own network first, followed by addresses on 192.253.253/24.

The elements in the sort list specification can just as easily be subnets or even individual hosts:

```
options {
  sortlist {
    { 15.1.200/21;      // if the querier is on 15.1.200/21
      { 15.1.200/21;  // then prefer addresses on that subnet
        15/8; };     // or at least on 15/8
      };
    };
  };
};
```

Preferring Nameservers on Certain Networks

BIND 8's topology feature is somewhat similar to *sortlist*, but it applies only to the process of choosing nameservers. (BIND 9 doesn't support topology as of 9.3.2.) Earlier in the book, we described how BIND chooses between a number of nameservers that are authoritative for the same zone by selecting the nameserver with the lowest round-trip time. But we lied—a little. BIND 8 actually places remote nameservers in 64-millisecond bands when comparing RTT. The first band is actually only 32 milliseconds wide (there! we did it again), from 0 to 32 milliseconds. The next extends from 33 to 96 milliseconds, and so on. The bands are designed so that nameservers on different continents are always in different bands.

The idea is to favor nameservers in lower bands but to treat servers in the same band as equivalent. If a nameserver compares two remote servers' RTTs, and one is in a lower band, the nameserver chooses to query the nameserver in the lower band. But if the remote servers are in the same band, the nameserver checks to see whether one of the remote servers is topologically closer.

So topology lets you introduce an element of fudge into the process of choosing a nameserver to query. It lets you favor nameservers on certain networks over others. Topology takes as an argument an address match list, where the entries are networks, listed in the order in which the local nameserver should prefer them (highest to lowest). Therefore:

```
topology {
  15/8;
  172.88/16;
};
```

tells the local nameserver to prefer nameservers on the network 15/8 over other nameservers, and nameservers on the network 172.88/16 over nameservers on networks other than 15/8. So if the nameserver has a choice between a nameserver on network 15/8, a nameserver on 172.88/16, and a nameserver on 192.168.1/24, assuming all three have RTT values in the same band, it will choose to query the nameserver on 15/8.

You can also negate entries in the topology address match list to penalize nameservers on certain networks. The earlier in the address match list the negated entry matches, the greater the penalty. You might use this to keep your nameserver from querying remote nameservers on a network that's particularly flaky, for example.

A Nonrecursive Nameserver

By default, BIND resolvers send recursive queries, and, by default, BIND nameservers do the work required to answer them. (If you don't remember how recursion works, see Chapter 2.) In the process of finding the answers to recursive queries, the nameserver builds up a cache of nonauthoritative information from other zones.

In some situations, it's undesirable for nameservers to do the extra work required to answer a recursive query or to build up a cache of data. The root nameservers are an example of one of these situations. The root nameservers are so busy that they can't expend the extra effort necessary to find the answers to recursive queries. Instead, they send a response based only on the authoritative data they have. The response may contain the answer, but it more likely contains a referral to other nameservers. And since the root servers do not support recursive queries, they don't build up a cache of nonauthoritative data, which is good because their caches would be huge.*

You can induce a BIND nameserver to run in nonrecursive mode with the following configuration (config) file statement:

```
options {
    recursion no;
};
```

Now the server will respond to recursive queries as if they were nonrecursive.

In conjunction with *recursion no*, there is one more configuration option necessary if you want to prevent your nameserver from building a cache:

```
options {
    fetch-glue no;
};
```

This stops the server from fetching missing glue when constructing the additional data section of a response. BIND 9 nameservers don't fetch glue, so the *fetch-glue* substatement is obsolete in BIND 9.

If you choose to make one of your servers nonrecursive, don't list that nameserver in any host's *resolv.conf* file. While you can make your nameserver nonrecursive, there is no corresponding option to make your resolver work with a nonrecursive

* Note that a root nameserver doesn't normally receive recursive queries unless a nameserver's administrator configured it to use the root server as a forwarder, a host's administrator configured its resolver to use the root server as a nameserver, or a user pointed *nslookup* or *dig* at the root server. All of these happen more often than you'd expect, though.

nameserver.* If your nameserver needs to continue to serve one or more resolvers, you can use the *allow-recursion* substatement, available in BIND 8.2.1 and later (including BIND 9). *allow-recursion* takes an address match list as an argument; any queriers that match can send recursive queries, but everyone else is treated as if recursion were off:

```
options {
    allow-recursion { 192.253.254/24; }; // Only resolvers on the FX
                                        // subnet should be sending
                                        // recursive queries
};
```

allow-recursion's default is to provide recursion to any IP address.

Also, don't list a nonrecursive nameserver as a forwarder. When a nameserver is using another server as a forwarder, it forwards *recursive* queries to the forwarder. Use *allow-recursion* to permit just authorized nameservers to use your forwarder instead.

You *can* list a nonrecursive nameserver as one of the servers authoritative for your zone data (i.e., you can tell a parent nameserver to refer queries about your zone to this server). This works because nameservers send nonrecursive queries between themselves.

Avoiding a Bogus Nameserver

In your term as nameserver administrator, you might find some remote nameserver that responds with bad information—old, incorrect, badly formatted, or even deliberately deceptive. You can attempt to find an administrator to fix the problem. Or you can save yourself some grief and configure your nameserver not to ask questions of this server, which is possible with BIND 8, and BIND 9.1.0 and later. Here is the configuration file statement:

```
server 10.0.0.2 {
    bogus yes;
};
```

Of course, you fill in the correct IP address.

If you tell your nameserver to stop talking to a server that is the only server for a zone, don't expect to be able to look up names in that zone. Hopefully, there are other servers for that zone that can provide good information.

An even more potent way of shutting out a remote nameserver is to put it on your *blackhole* list. Your nameserver won't query nameservers on the list, *and* it won't

* In general. Of course, programs designed to send nonrecursive queries, or programs that can be configured to send nonrecursive queries, such as *nslookup* or *dig*, will still work.

respond to their queries.* *blackhole* is an *options* substatement that takes an address match list as an argument:

```
options {  
  
    /* Don't waste your time trying to respond to queries from RFC 1918  
       private addresses */  
  
    blackhole {  
        10/8;  
        172.16/12;  
        192.168/16;  
    };  
};
```

This prevents your nameserver from trying to respond to any queries it might receive from RFC 1918 private addresses. There are no routes on the Internet to these addresses, so trying to reply to them is a waste of CPU cycles and bandwidth.

The *blackhole* substatement is supported on BIND 8 versions after 8.2 and on BIND 9 after 9.1.0.

System Tuning

While for many nameservers BIND's default configuration values work just fine, yours may be one of those that need some further tuning. In this section, we discuss all the various dials and switches available to you to tune your nameserver.

Zone Transfers

Zone transfers can place a heavy load on a nameserver. Consequently, BIND has mechanisms for limiting the zone transfer load that your slave nameservers place on their master servers.

Limiting transfers requested per nameserver

On a slave nameserver, you can limit the number of zones the server requests from a single master nameserver. This will make the administrator of your master nameserver happy because his host won't be pounded for zone transfers if all the zones change—important if hundreds of zones are involved.

The config file statement is:

```
options {  
    transfers-per-ns 2;  
};
```

* And we really mean *won't respond*. Whereas queriers disallowed by an *allow-query* access control list get a response back indicating that their query was refused, queries on the *blackhole* list get nothing back. Nada.

In BIND 9, you can also set the limit on a server-by-server basis instead of globally. To do this, use the *transfers* substatement inside a *server* statement, where the server is the nameserver you'd like to specify the limit for:

```
server 192.168.1.2 {
    transfers 2;
};
```

This overrides any global limit set in the *options* statement. The default limit is two active zone transfers per master nameserver. That limit may seem small, but it works. Here's what happens: suppose your nameserver needs to load four zones from a master nameserver. Your nameserver starts transferring the first two zones and waits to transfer the third and fourth zones. After one of the first two zone transfers completes, the nameserver begins transferring the third zone. After another transfer completes, the nameserver starts transferring the fourth zone. The net result is the same as before when there were limits—all the zones are transferred—but the work is spread out.

When may you need to increase this limit? You might notice that it is taking too long to synch up with the master nameserver, and you know that the reason is the serializing of transfers—not just that the network between the hosts is slow. This probably matters only if you're maintaining hundreds or thousands of zones. You also need to make sure that the master nameserver and the networks in between can handle the additional workload of more simultaneous zone transfers.

Limiting the total number of zone transfers requested

The last limit dealt with the zone transfers requested from a single master nameserver. This limit deals with multiple master nameservers. BIND lets you limit the total number of zones your nameserver can request at any one time. The default limit is 10. As we explained previously, your nameserver pulls only two zones from any single master server by default. If your nameserver is transferring two zones from each of five master servers, your server has hit the limit and will postpone any further transfers until one of the current transfers finishes.

The BIND 8 and 9 *named.conf* file statement is:

```
options {
    transfers-in 10;
};
```

If your host or network cannot handle 10 active zone transfers, you should decrease this number. If you run a server that supports hundreds or thousands of zones, and your host and network can support the load, you might want to raise this limit. If you raise this limit, you may also need to raise the limit for the number of transfers per nameserver. (For example, if your nameserver loads from only four remote nameservers, and your nameserver will start only two transfers per remote nameserver, your server will have at most eight active zone transfers. Increasing the

limit for the total number of zone transfers won't have any effect unless you also increase the per-nameserver limit.)

Limiting the total number of zone transfers served

BIND 9 nameservers can also limit the number of zone transfers they'll *serve* simultaneously. This is arguably more useful than limiting the number you'll request because without it you'd have to rely on the kindness of the administrators who run your slave nameservers not to overload your master server. Here's the BIND 9 statement:

```
options {
    transfers-out 10;
};
```

The default limit is 10.

Limiting the duration of a zone transfer

BIND also lets you limit the duration of an inbound zone transfer. By default, zone transfers are limited to 120 minutes, or 2 hours. The idea is that a zone transfer taking longer than 120 minutes is probably hung and won't complete, and the process is taking up resources unnecessarily. If you'd like a smaller or larger limit, perhaps because you know that your nameserver is a slave for a zone that normally takes more than 120 minutes to transfer, you can use this statement:

```
options {
    max-transfer-time-in 180;
};
```

You can even place a limit on transfers of a particular zone by using the *max-transfer-time-in* substatement inside a *zone* statement. For example, if you know that the *rinkydink.com* zone always takes a long time (say three hours) to transfer, either because of its size or because the links to the master nameserver are so slow, but you'd still like a shorter time limit (maybe an hour) on other zone transfers, you could use:

```
options {
    max-transfer-time-in 60;
};

zone "rinkydink.com" {
    type slave;
    file "bak.rinkydink.com";
    masters { 192.168.1.2; };
    max-transfer-time-in 180;
};
```

In BIND 9, there's also a *max-transfer-time-out* substatement that can be used the same way (either within an *options* statement or a *zone* statement). It controls how long an outbound zone transfer (i.e., a transfer to a slave) can run and has the same default value (120 minutes) as *max-transfer-time-in*.

BIND 9 nameservers even let you limit zone transfer idle time, the length of time since the zone transfer made any progress. The two configuration substatements, *max-transfer-idle-in* and *max-transfer-idle-out*, control how long an inbound and an outbound zone transfer can be idle, respectively. Like the transfer time limits, both can be used as either an *options* substatement or a *zone* substatement. The default limit on idle time is 60 minutes.

Limiting the frequency of zone transfers

It's possible to set a zone's refresh interval so low as to cause undue work for that zone's slave nameservers. For example, if your nameserver is a slave for thousands of zones, and the administrators of some of those zones set their refresh intervals to very small values, your nameserver may not be able to keep up with all the refreshing it needs to do. (If you run a nameserver that's a slave for that many zones, be sure to read the later section "Limiting SOA queries"; you may also need to tune the number of SOA queries allowed.) On the other hand, it's possible for an inexperienced administrator to set her zone's refresh interval so high as to cause prolonged inconsistencies between the zone's primary and slave nameservers.

BIND versions 9.1.0 and later let you limit the refresh interval with *max-refresh-time* and *min-refresh-time*. These substatements bracket the refresh value for all master, slave, and stub zones if used as an *options* substatement, or just for a particular zone if used as a *zone* substatement. Both take a number of seconds as an argument:

```
options {
    max-refresh-time 86400;    // refresh should never be more than a day
    min-refresh-time 1800;    // or less than 30 minutes
};
```

BIND 9.1.0 and later nameservers also let you limit the retry interval with the *max-retry-time* and *min-retry-time* substatements, which use the same syntax.

More efficient zone transfers

A zone transfer, as we said earlier, comprises many DNS messages sent end-to-end over a TCP connection. Traditional zone transfers put only a single resource record in each DNS message. That's a waste of space: you need a full header on each DNS message, even though you're carrying only a single record. It's like being the only person in a Chevy Suburban. A TCP-based DNS message can carry many more records: its maximum size is a whopping 64 KB!

BIND 8 and 9 nameservers understand a new zone transfer format, called *many-answers*. The *many-answers* format puts as many records as possible into a single DNS message. The result is that a *many-answers* zone transfer takes less bandwidth because there's less overhead and less CPU time because less time is spent unmarshaling DNS messages.

The *transfer-format* substatement controls which zone transfer format the nameserver uses for zones for which it is a master. That is, it determines the format of the zones that your nameserver transfers to its slaves. *transfer-format* is both an *options* substatement and a *server* substatement; as an *options* substatement, *transfer-format* controls the nameserver's global zone transfer format. BIND 8's default is to use the old *one-answer* zone transfer format for interoperability with BIND 4 nameservers. BIND 9's default is to use the *many-answers* format. The statement:

```
options {
    transfer-format many-answers;
};
```

configures the nameserver to use the *many-answers* format for zone transfers to all slave servers, unless a *server* statement such as the following explicitly says otherwise:

```
server 192.168.1.2 {
    transfer-format one-answer;
};
```

If you'd like to take advantage of the new, more efficient zone transfers, do one of the following:

- Set your nameserver's global zone transfer format to *many-answers* (or don't add one at all if you're running BIND 9) if most of your slaves run BIND 8, BIND 9, or the Microsoft DNS Server, which also understands the format.*
- Set your nameserver's global zone transfer format to *one-answer* if most of your slaves run BIND 4. Then use the *transfer-format server* substatement to adjust the global setting for exceptional servers.

Remember that if you run BIND 9, you'll need to add an explicit *server* statement for all BIND 4 slaves to change their transfer formats to *one-answer*.

Resource Limits

Sometimes you just want to tell the nameserver to stop being so greedy: don't use more than this much memory, don't open more than this many files. With BIND 8 and 9, you can impose many such limits.

Changing the data segment size limit

Some operating systems place a default limit on the amount of memory a process can use. If your OS ever prevents your nameserver from allocating additional memory, the server will panic or exit. Unless your nameserver handles an extremely large amount of data or the limit is very small, you won't run into this limit. But if you do,

* Beware older versions of the Microsoft DNS Server, which can't handle *many-answers* zone transfers that include DNS messages over 16 KB. If some of your slaves run this version, upgrade them or stick with the *one-answer* format until they're upgraded.

BIND 8 as well as BIND 9.1.0 and later nameservers have configuration options to change the system's default limit on data segment size. You might use these options to set a higher limit for *named* than the default system limit.

For both BIND 8 and 9, the statement is:

```
options {
    datasize size
};
```

size is an integer value, specified in bytes by default. You can specify a unit other than bytes by appending a character: k (kilobyte), m (megabyte), or g (gigabyte). For example, "64m" is 64 megabytes.



Not all systems support increasing the data segment size for individual processes. If your system doesn't, the nameserver issues a *syslog* message at level LOG_WARNING to tell you that this feature is not implemented.

Changing the stack size limit

In addition to allowing you to change the limit on the size of the nameserver's data segment, BIND 8 and BIND 9.1.0 and later nameservers let you adjust the limit the system places on the amount of memory the *named* process's stack can use. Here's the syntax:

```
options {
    stacksize size;
};
```

where *size* is specified as in *datasize*. Like *datasize*, this feature works only on systems that permit a process to modify the stack size limit.

Changing the core size limit

If you don't appreciate *named*'s leaving huge core files lying around on your filesystem, you can at least make them smaller using *coresize*. Conversely, if *named* hasn't been able to dump an entire core file because of a tight operating system limit, you may be able to raise that limit with *coresize*.

coresize's syntax is:

```
options {
    coresize size;
};
```

Again, as with *datasize*, this feature works only on operating systems that let processes modify the limit on core file size and doesn't work on versions of BIND 9 before 9.1.0.

Changing the open files limit

If your nameserver is authoritative for a lot of zones, the *named* process opens lots of files when it starts up—one per authoritative zone, assuming you use backup zone datafiles with the zones you’re a slave for. Likewise, if the host running your nameserver has lots of virtual network interfaces,* *named* requires one file descriptor per interface. Most Unix operating systems place a limit on the number of files any process can open concurrently. If your nameserver tries to open more files than this limit permits, you’ll see this message in your *syslog* output:

```
named[pid]: socket(SOCK_RAW): Too many open files
```

If your operating system also permits changing that limit on a per-process basis, you can increase it using BIND’s *files* substatement:

```
options {
    files number;
};
```

The default is *unlimited* (which is also a valid value), although this just means that the nameserver doesn’t place a limit on the number of concurrently open files; the operating system may, however. And though we know you’re sick of our saying it, BIND 9 doesn’t support this until 9.1.0.

Limiting the number of clients

BIND 9 lets you restrict the number of clients your nameserver can serve concurrently. You can apply a limit to the number of recursive clients (resolvers plus nameservers using your nameserver as a forwarder) with the *recursive-clients* substatement:

```
options {
    recursive-clients 5000;
};
```

The default limit is 1000. If you find your nameserver refusing recursive queries and logging, as shown by an error message like this one:

```
Sep 22 02:26:11 toystory named[13979]: client 192.249.249.151#1677: no more
recursive clients: quota reached
```

you may want to increase the limit. Conversely, if you find your nameserver struggling to keep up with the deluge of recursive queries it receives, you can lower the limit.

You can also apply a limit to the number of concurrent TCP connections your nameserver will process (for zone transfers and TCP-based queries) with the *tcp-clients* substatement. TCP connections consume considerably more resources than UDP

* Chapter 14 describes better solutions to the “too many open files” problem than bumping up the limit on files.

because the host needs to track the state of the TCP connection. The default limit is 100.

Limiting SOA queries

BIND 8.2.2 and later nameservers let you limit the number of outstanding SOA queries your nameserver allows. If your nameserver is a slave for thousands of zones, it may have many queries for the SOA records of those zones pending at any one time. Tracking each query requires a small but finite amount of memory, so, by default, BIND 8 nameservers limit outstanding SOA queries to four. If you find that your nameserver can't keep up with its duties as a slave, you may need to raise the limit with the *serial-queries* substatement:

```
options {
    serial-queries 1000;
};
```

serial-queries is obsolete in BIND 9. BIND 9 limits the rate at which serial queries are sent (to 20 per second), not the number of outstanding queries. This limit can be adjusted with the *serial-query-rate options* substatement, which takes an integer (number of queries per second) as an argument.

Maintenance Intervals

BIND nameservers have always done periodic housekeeping, such as refreshing zones for which the server is a slave. With BIND 8 and 9, you can control how often these chores happen or whether they happen at all.

Cleaning interval

All nameservers passively remove stale entries from the cache. Before a nameserver returns a record to a querier, it checks to see whether the TTL on that record has expired. If it has, the nameserver starts the resolution process to find more current data. However, relying entirely on this mechanism can result in an unnecessarily large cache. A nameserver may cache a lot of records in a flurry of name resolution and then just let those records spoil in the cache, taking up valuable memory even though the records are stale.

To deal with this, BIND nameservers actively walk through the cache and remove stale records once per cleaning interval. This helps minimize the amount of memory used by the cache. On the other hand, the cleaning process takes CPU time, and on very slow or very busy nameservers, you may not want it running often.

By default, the cleaning interval is 60 minutes. You can tune the interval with the *cleaning-interval* substatement to the *options* statement. For example:

```
options {
    cleaning-interval 120;
};
```

sets the cleaning interval to 120 minutes. To turn off cache cleaning entirely, set the cleaning interval to 0.

Interface interval

We've said already that BIND, by default, listens on all of a host's network interfaces. BIND 8 and 9 nameservers are actually smart enough to notice when a network interface on the host they're running on comes up or goes down. To do this, they periodically scan the host's network interfaces. This happens once each interface interval, which is 60 minutes by default. If you know that the host your nameserver runs on has no dynamic network interfaces, you can disable scanning for new interfaces to avoid the unnecessary hourly overhead by setting the interface interval to 0:

```
options {
    interface-interval 0;
};
```

On the other hand, if your host brings up or tears down network interfaces more often than every hour, you may want to reduce the interval.

Statistics interval

Okay, adjusting the statistics interval—the frequency with which the BIND 8 nameserver dumps statistics to the statistics file—won't have much effect on performance. But it fits better here, with the other maintenance intervals, than anywhere else in the book.

The syntax of the *statistics-interval* substatement is exactly analogous to the other maintenance intervals:

```
options {
    statistics-interval 60;
};
```

And as with the other maintenance intervals, the default is 60 minutes, and a setting of 0 disables the periodic dumping of statistics. Because BIND 9 doesn't write statistics to *syslog*, it doesn't have a configurable statistics interval.

TTLs

Internally, BIND trims TTL values on cached records to reasonable values. BIND 8 and 9 nameservers make the limits configurable.

In BIND 8.2 or later and all BIND 9 nameservers, you can limit the TTL on cached negative information with the *max-ncache-ttl options* substatement. This was designed as a safety net for people who upgraded to 8.2 and its new negative caching scheme (RFC 2308 and all that, described in Chapter 4). This new nameserver caches negative information according to the last field of the zone's SOA record, and

many zone admins still use that field for the default TTL for the zone—probably much too long for negative information. So a prudent nameserver administrator can use a substatement such as:

```
options {
    max-ncache-ttl 3600; // 3600 seconds is one hour
};
```

to trim larger negative caching TTLs to one hour. The default is 10,800 seconds (3 hours). Without this precaution, it's possible that someone looking up a brand-new record could get a negative answer (maybe because the new record hadn't yet reached the zone's slaves), and her nameserver would cache that answer for an inordinately long time, rendering the record unresolvable.

BIND 9 nameservers also let you configure the upper limit of the TTL on cached records with the *max-cache-ttl* substatement. The default is one week. BIND 8 nameservers trim TTLs to one week, too, but they don't let you configure the limit.

Finally, there's what's referred to as the *lame TTL*, which isn't really a TTL at all. Instead, it's the amount of time your nameserver remembers that a given remote nameserver isn't authoritative for a zone that's delegated to it. This prevents your nameserver from wasting valuable time and resources asking that nameserver for information about a domain name it knows nothing about. BIND 8 nameservers after 8.2 and BIND 9 nameservers newer than 9.1.0 let you tune the lame TTL with the *lame-ttl options* substatement. The default lame TTL is 600 seconds (10 minutes), with a maximum of 30 minutes. You can even turn off the caching of lame nameservers with a value of 0, though that strikes us as a Very Bad Thing.

Compatibility

Now, to wrap things up, we'll cover some configuration substatements related to your nameserver's compatibility with resolvers and other nameservers.

The *rfc2308-type1* substatement controls the format of the negative answers your nameserver sends. By default, BIND 8 and 9 nameservers include only the SOA record in a negative response from a zone. Another legitimate format for that response includes the zone's NS records, too, but some older nameservers misinterpret such a response as a referral. If for some odd reason (odd because we can't think of one) you want to send those NS records as well, use:

```
options {
    rfc2308-type1 yes;
};
```

rfc2308-type1 is first supported in BIND 8.2; BIND 9 doesn't support it.

Older nameservers can also cause problems when you send them cached negative responses. Before the days of negative caching, all negative responses were, naturally, authoritative. But some nameserver implementers added a check to their servers:

they'd accept only authoritative negative responses. Then, with the advent of negative caching, negative responses could be nonauthoritative. Oops!

The *auth-nxdomain options* substatement lets your nameserver falsely claim that a negative answer from its cache is actually authoritative, just so one of these older nameservers will believe it. By default, BIND 8 nameservers have *auth-nxdomain* on (set to yes); BIND 9 nameservers turn it off by default.

When some adventurous souls ported BIND 8.2.2 to Windows NT, they found they needed the nameserver to treat a carriage return and a newline at the end of a line (Windows' end-of-line sequence) the same way it treated just a newline (Unix's end-of-line). For that behavior, use:

```
options {
    treat-cr-as-space yes;
};
```

BIND 9 ignores this option because it always treats a carriage return and a newline the same way as a newline by itself.

Finally, if you run a BIND nameserver that's configured as a slave to Microsoft DNS Servers with Active Directory–integrated zones, you may see an error message in *syslog* informing you that the zones' serial numbers have decreased. This is a side effect of the replication mechanism Active Directory uses and isn't cause for alarm. If you want to squelch the message, you can use BIND 9.3.0's new *multi-master zone* substatement to tell your slave that the IP addresses in the *masters* substatement actually belong to multiple nameservers, not to multiple interfaces on a single nameserver:

```
zone "_msdcs.domain.com" {
    type slave;
    masters { 10.0.0.2; 10.0.0.3; };
    file "bak._msdcs.domain.com";
    multi-master yes;
};
```

The ABCs of IPv6 Addressing

Before we cover the next two topics, which include how domain names map to IPv6 addresses and vice versa, we'd better describe the representation and structure of IPv6 addresses. As you probably know, IPv6 addresses are 128 bits long. The preferred representation of an IPv6 address is eight groups of as many as four hexadecimal digits, separated by colons; for example:

```
2001:db80:0123:4567:89ab:cdef:0123:4567
```

The first group of hex digits (2001, in this example) represents the most significant (or highest-order) 16 bits of the address.

Groups of digits that begin with one or more zeros don't need to be padded to four places, so you can also write the previous address as:

```
2001:db80:123:4567:89ab:cdef:123:4567
```

Each group must contain at least one digit, though, unless you're using the `::` notation. The `::` notation allows you to compress sequential groups of zeros. This comes in handy when you're specifying just an IPv6 prefix. For example:

```
2001:db80:dead:beef::
```

specifies the first 64 bits of an IPv6 address as `2001:db80:dead:beef` and the remaining 64 as zeros.

You can also use `::` at the beginning of an IPv6 address to specify a suffix. For example, the IPv6 loopback address is commonly written as:

```
::1
```

or 127 zeros followed by a single one. You can even use `::` in the middle of an address as a shorthand for contiguous groups of zeros:

```
2001:db80:dead:beef::1
```

You can use the `::` shorthand only once in an address, since more than one could be ambiguous.

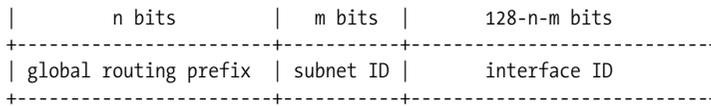
IPv6 prefixes are specified in a format similar to IPv4's CIDR notation. As many bits of the prefix as are significant are expressed in the standard IPv6 notation, followed by a slash and a decimal count of exactly how many significant bits there are. So the following three prefix specifications are equivalent (though obviously not equivalently terse):

```
2001:db80:dead:beef:0000:00f1:0000:0000/96
2001:db80:dead:beef:0:f1:0:0/96
2001:db80:dead:beef:0:f1::/96
```

The IPv6 equivalent of an IPv4 network number is called a *global routing prefix*. These are a variable number of high-order bits of the IPv6 address used to identify a particular network. All global unicast addresses have global routing prefixes that begin with the binary value 001. These are assigned by address registries or Internet service providers. The global routing prefix itself may be hierarchical, with an address registry responsible for allocating lower-order bits to various ISPs, and ISPs responsible for allocating the lowest-order bits of the prefix to its customers.

After the global routing prefix, IPv6 addresses may contain another variable number of bits that identify the particular subnet within a network, called the *subnet ID*. The remaining bits of the address identify a particular network interface and are referred to as the *interface ID*.

Here's a diagram from RFC 3513 that shows how these parts fit together:



According to RFC 3177, which recommends how IPv6 addresses should be allocated to sites:

- Home network subscribers should receive a /48 prefix.
- Small and large enterprises should receive a /48 prefix.
- Very large subscribers could receive a /47 or slightly shorter prefix.

Addresses and Ports

Since IPv4 is relatively simple compared to IPv6, let's cover the nameserver's IPv4 configuration together with IPv6. BIND 8.4.0 and later and all BIND 9 nameservers can use both IPv4 and IPv6 as a transport; that is, they can send and receive queries and responses over IPv4 and IPv6. Both nameservers also support similar substatements to configure which network interfaces and ports they listen on and send queries from.

Configuring the IPv4 Transport

You can specify which network interface your BIND 8 or BIND 9 nameserver listens on for queries using the *listen-on* substatement. In its simplest form, *listen-on* takes an address match list as an argument:

```
options {
    listen-on { 192.249.249/24; };
};
```

The nameserver listens on any of the local host's network interfaces whose addresses match the address match list. To specify an alternate port (one other than 53) to listen on, use the *port* modifier:

```
options {
    listen-on port 5353 { 192.249.249/24; };
};
```

In BIND 9, you can even specify a different port for each network interface:

```
options {
    listen-on { 192.249.249.1 port 5353; 192.253.253.1 port 1053; };
};
```

Note that there's no way to configure most resolvers to query a nameserver on an alternate port, so this nameserver might not be as useful as you'd think. Still, it can serve zone transfers because you can specify an alternate port in a *masters* substatement:

```
zone "movie.edu" {
    type slave;
```

```

masters port 5353 { 192.249.249.1; };
file "bak.movie.edu";
};

```

Or, if your BIND 9 nameserver has multiple master nameservers, each listening on a different port, you can use something like:

```

zone "movie.edu" {
    type slave;
    masters { 192.249.249.1 port 5353; 192.253.253.1 port 1053; };
    file "bak.movie.edu";
};

```

BIND 9 even allows you to send your NOTIFY messages to alternate ports. To tell your master nameserver to notify all its slave nameservers on the same oddball port, use:

```

also-notify port 5353 { 192.249.249.9; 192.253.253.9; }; // zardoz's two addresses

```

To notify each on a different port, use:

```

also-notify { 192.249.249.9 port 5353; 192.249.249.1 port 1053; };

```

If your slave nameserver needs to use a particular local network interface to send queries—perhaps because one of its master nameservers recognizes it by only one of its many addresses—use the *query-source* substatement:

```

options {
    query-source address 192.249.249.1;
};

```

Note that the argument isn't an address match list; it's a single IP address. You can also specify a particular source port to use for queries:

```

options {
    query-source address 192.249.249.1 port 53;
};

```

BIND's default behavior is to use whichever network interface the route to the destination points out and a random, unprivileged port, i.e.:

```

options {
    query-source address * port *;
};

```

Note that *query-source* applies only to UDP-based queries; TCP-based queries always choose the source address according to the routing table and use a random source port.

There's an analogous *transfer-source* substatement that controls the source address to use for zone transfers. In BIND 9, it also applies to a slave nameserver's SOA queries and to forwarded dynamic updates:

```

options {
    transfer-source 192.249.249.1;
};

```

As with *query-source*, the argument is just a single IP address, but with no *address* keyword. With BIND 8, there's no *port* modifier. With BIND 9, you can specify a source port:

```
options {
    transfer-source 192.249.249.1 port 1053;
};
```

However, that source port applies only to UDP-based traffic (i.e., SOA queries and forwarded dynamic updates).

transfer-source can also be used as a *zone* substatement, in which case it applies only to transfers (and, for BIND 9, SOA queries and dynamic updates) of that zone:

```
zone "movie.edu" {
    type slave;
    masters { 192.249.249.3; };
    file "bak.movie.edu";
    transfer-source 192.249.249.1; // always use IP address on same network
                                // for transfers of movie.edu
};
```

Finally, as of BIND 9.1.0, there's even a substatement that lets you control which address you send NOTIFY messages from, called *notify-source*. This comes in handy with multihomed nameservers because, by default, slaves accept only NOTIFY messages for a zone from IP addresses in that zone's *masters* substatement. *notify-source*'s syntax is similar to the syntax of the other *-source* substatements; for example:

```
options {
    notify-source 192.249.249.1;
};
```

As with *transfer-source*, *notify-source* can specify a source port and can be used as a *zone* statement to apply only to that zone:

```
zone "movie.edu" {
    type slave;
    masters { 192.249.249.3; };
    file "bak.movie.edu";
    notify-source 192.249.249.1 port 5353;
};
```

If you can't control the IP address from which NOTIFY messages are sent (because you don't administer the master server, for example), you can either include all the master's IP addresses in your zone's *masters* substatement, or you can use the *allow-notify* substatement to explicitly permit NOTIFY messages from addresses not listed in *masters*.

Configuring the IPv6 Transport

By default, a BIND 9 nameserver won't listen for IPv6-based queries. To configure it to listen on the local host's IPv6 network interfaces, use the *listen-on-v6* substatement:

```
options {
    listen-on-v6 { any; };
};
```

Before BIND 9.3.0, the *listen-on-v6* substatement accepted only *any* and *none* as arguments. You can also configure a BIND nameserver to listen on an alternate port—or even multiple ports—with the *port* modifier:

```
options {
    listen-on-v6 port 1053 { any; };
};
```

To listen on more than one IPv6 interface or port, use multiple *listen-on-v6* substatements. The default port is, of course, 53.

You can also determine which IPv6 address your nameserver uses as the source address for outgoing queries with the *transfer-source-v6* substatement, as in:

```
options {
    transfer-source-v6 222:10:2521:1:210:4bff:fe10:d24;
};
```

or, also specifying a source port:

```
options {
    transfer-source-v6 222:10:2521:1:210:4bff:fe10:d24 port 53;
};
```

Only BIND 9 supports setting the source port, as in the second example. The default is to use the source address corresponding to whichever network interface the route points out and a random, unprivileged source port. As with *transfer-source*, you can use *transfer-source-v6* as a *zone* substatement. And the source port applies only to SOA queries and forwarded dynamic updates.

Finally, BIND 9.1.0 and later let you determine which IPv6 address to use in NOTIFY messages, à la the *notify-source* substatement. The IPv6 substatement is called, not surprisingly, *notify-source-v6*:

```
options {
    notify-source-v6 222:10:2521:1:210:4bff:fe10:d24;
};
```

As with *transfer-source-v6*, you can specify a source port and use the substatement in a *zone* statement.

EDNSO

UDP-based DNS messages have traditionally been limited to 512 bytes. This limit was instituted to prevent fragmentation, which in the early days of the Internet was costly and unreliable. Times have changed, though, and most paths on the Internet can accommodate much larger UDP datagrams.

Thanks to new developments in DNS, such as DNSSEC and IPv6 support, the average response is getting larger. Responses from signed zones, in particular, can easily exceed the 512-byte limit, which can cause costly retries over TCP.

The Extension Mechanisms for DNS, version 0, referred to as EDNS0, introduces a simple signaling system to DNS. Using this system, a resolver or nameserver can tell another nameserver that it can handle a DNS message larger than 512 bytes. (In fact, the sender can signal other capabilities, too, as we'll see in the next chapter.)

BIND nameservers have supported EDNS0 since versions 9.0.0 and 8.3.0. These nameservers send EDNS0 signaling information by default, and try to negotiate a UDP-based DNS message size of 4,096 bytes. If they receive a response that indicates that the nameserver they're talking to doesn't understand EDNS0, they'll fall back to using messages that adhere to the old 512-byte limit.

This technique generally works well, but occasionally you'll run across a nameserver that reacts badly to EDNS0 probes. To cope with these nameservers, you can use the new *edns server* substatement to turn off EDNS0 for that nameserver:

```
server 10.0.0.1 {
    edns no;
};
```

This is supported in BIND 9.2.0 and later and BIND 8.3.2 and later nameservers.

BIND 9.3.0 and later and 8.4.0 and later also allow you to configure the size of the UDP-based DNS messages your nameserver will negotiate with the *edns-udp-size options* substatement:

```
options {
    directory "/var/named";
    edns-udp-size 512;
};
```

This can be useful if your firewall doesn't understand that DNS messages can exceed 512 bytes in size and keeps dropping legitimate messages. (Of course, we think you should upgrade your firewall, but you may need to resort to this in the interim.) The maximum value for *edns-udp-size* is 4096; the minimum is 512.

IPv6 Forward and Reverse Mapping

Clearly, the existing A record won't accommodate IPv6's 128-bit addresses; BIND expects an A record's record-specific data to be a 32-bit address in dotted-octet format.

The IETF came up with a simple solution to this problem, described in RFC 1886. A new address record, AAAA, was used to store a 128-bit IPv6 address, and a new IPv6 reverse-mapping domain, *ip6.int*, was introduced. This solution was straightforward enough to implement in BIND 4. Unfortunately, not everyone liked the simple solution, so it came up with a much more complicated one. This solution, which we'll describe shortly, involved the new A6 and DNAME records and required a complete overhaul of the BIND nameserver to implement. Then, after much acrimonious debate, the IETF decided that the new A6/DNAME scheme required too much overhead, was prone to failure, and was of unproven usefulness. At least temporarily, it moved the RFC that describes A6 records off the IETF standards track to experimental status, deprecated the use of DNAME records in reverse-mapping zones, and trotted old RFC 1886 back out. Everything old is new again.

For now, the AAAA record is the way to handle IPv6 forward mapping. The use of *ip6.int* is deprecated, however, mostly for political reasons; it's been replaced by *ip6.arpa*. In the interest of preparing you for all possible futures, including one in which A6 and DNAME make a dramatic comeback, we'll cover both methods.

AAAA and ip6.arpa

The easy way to handle IPv6 forward mapping, described in RFC 1886, is with an address record that's four times as long as an A record. That's the AAAA (pronounced "quad A") record. The AAAA record takes as its record-specific data the textual format of an IPv6 address, as described earlier. So, for example, you'd see AAAA records like this one:

```
ip6-host IN AAAA 2001:db80:1:2:3:4:567:89ab
```

RFC 1886 also established *ip6.int*, now replaced by *ip6.arpa*, a new reverse-mapping namespace for IPv6 addresses. Each level of subdomain under *ip6.arpa* represents four bits of the 128-bit address, encoded as a hexadecimal digit just like in the record-specific data of the AAAA record. The least significant (lowest-order) bits appear at the far left of the domain name. Unlike the format of addresses in AAAA records, omitting leading zeros is not allowed, so there are always 32 hexadecimal digits and 32 levels of subdomain below *ip6.arpa* in a domain name corresponding to a full IPv6 address. The domain name that corresponds to the address in the previous example is:

```
b.a.9.8.7.6.5.0.4.0.0.0.3.0.0.0.2.0.0.0.1.0.0.0.0.8.b.d.1.0.0.2.ip6.arpa.
```

These domain names have PTR records attached, just as the domain names under *in-addr.arpa* do:

```
b.a.9.8.7.6.5.0.4.0.0.0.3.0.0.0.2.0.0.0.1.0.0.0.0.8.b.d.1.0.0.2.ip6.arpa. IN PTR  
mash.ip6.movie.edu.
```

A6, DNAMEs, Bitstring Labels, and ip6.arpa

That's the easy way. The more difficult—and now only experimental—way of handling IPv6 forward and reverse mapping uses two new record types, A6 and DNAME records. A6 and DNAME records are described in RFCs 2874 and 2672, respectively. Version 9.0.0 was the first version of BIND to support these records.



There's no guarantee that this method of doing IPv6 forward and reverse mapping will ever reemerge as the standard, and the latest versions of BIND don't even support it fully. You may be wasting your time in reading this section, just as we may have wasted our time in writing it. We're leaving it here because fashion is cyclical, and A6 and friends may yet make a comeback.

If you want to experiment with A6 and bitstring labels, dig out a BIND 9.2.x nameserver. The ISC removed support for bitstring labels in 9.3.0, and advises that A6 is “no longer fully supported.” Also, note that bitstring labels can also cause interoperability problems with some DNS software.

The main reason a replacement for the AAAA record and *ip6.int* reverse-mapping scheme was sought was because they make network renumbering difficult. For example, if an organization were to change ISPs, it would have to change all the AAAA records in its zone datafiles because some of the bits of an IPv6 address are an identifier for the ISP.* Or imagine an ISP changing address registries: this would wreak havoc with its customers' zone data.

A6 records and forward mapping

To make renumbering easier, A6 records can specify only a part of an IPv6 address, such as the last 64 bits (maybe the interface ID) assigned to a host's network interface, and then refer to the remainder of the address by a symbolic domain name. This allows zone administrators to specify only the part of the address under their control. To build an entire address, a resolver or nameserver must follow the chain of A6 records from a host's domain name to the address registry's ID. And that chain may branch if a site network is connected to multiple ISPs or if an ISP is connected to multiple address registries.

For example, the A6 record:

```
$ORIGIN movie.edu.  
drunkenmaster IN A6 64 ::0210:4bff:fe10:0d24 subnet1.v6.movie.edu.
```

* And, of course, the new ISP might use a different address registry, which would mean more bits to change.

specifies the final 64 bits of *drunkenmaster.movie.edu*'s IPv6 address (64 is the number of bits of the prefix *not* specified in this A6 record) and that the remaining 64 bits can be found by looking up an A6 record at *subnet1.v6.movie.edu*.

subnet1.v6.movie.edu, in turn, specifies the last 16 bits of the 64-bit prefix (the subnet ID) that we didn't specify in *drunkenmaster.movie.edu*'s A6 address, as well as the domain name of the next A6 record to look up:

```
$ORIGIN v6.movie.edu.  
subnet1 IN A6 48 0:0:0:1:: movie-u.isp-a.net.  
subnet1 IN A6 48 0:0:0:1:: movie.isp-b.net.
```

The first 48 bits of the prefix in *subnet1.v6.movie.edu*'s record-specific data are set to 0 because they're not significant here.

In fact, these records tell us to look up *two* A6 records next, one at *movie-u.isp-a.net* and one at *movie.isp-b.net*. That's because Movie U. has connections to two ISPs, ISP A and ISP B. In ISP A's zone, we might find:

```
$ORIGIN isp-a.net.  
movie-u IN A6 40 0:0:21:: isp-a.rir-1.net.
```

indicating an eight-bit pattern within the global routing prefix field set by ISP A for the Movie U. network. (Remember, the global routing prefix field can be hierarchical, too, comprising both an identifier for our ISP assigned to it by its address registry *and* our ISP's identifier for our network.) Since the ISP assigns some bits of the global routing prefix to us but has the rest of the prefix assigned by its address registry, we'd expect to see only our bits in our ISP's zone data. The remainder of the prefix appears in an A6 record in its address registry's zone.

In ISP B's zone, we might find the following record showing us the bits that ISP assigns for our network:

```
$ORIGIN isp-b.net.  
movie IN A6 40 0:0:42:: isp-b.rir-2.net.
```

In the address registries' zones, we might find the next four bits of the IPv6 address:

```
$ORIGIN rir-1.net.  
isp-a IN A6 36 0:0:0500:: rir-2.top-level-v6.net.
```

and:

```
$ORIGIN rir-2.net.  
isp-b IN A6 36 0:0:0600:: rir-1.top-level-v6.net.
```

Finally, in the top-level IPv6 address registry's zone, we might find these records showing us the bits of the prefix assigned to RIR 1 and RIR 2:

```
$ORIGIN top-level-v6.net.  
rir-1 IN A6 0 2001:db80::2  
rir-2 IN A6 0 2001:db80::6
```

By following this chain of A6 records, a nameserver can assemble all 128 bits of *drunkenmaster.movie.edu*'s two IPv6 addresses. These turn out to be:

```
2001:db80:2521:1:210:4bff:fe10:d24
2001:db80:6642:1:210:4bff:fe10:d24
```

The first of these uses a route through RIR 1 and ISP A to the Movie U. network, and the second uses a route through RIR 2 and ISP B. (We're connected to two ISPs for redundancy.) Note that if RIR 1 changes its prefix assignment for ISP A, it needs to change only the A6 record for *isp-a.rir-1.net* in its zone data; the change "cascades" into all A6 chains that go through ISP A. This makes the management of addressing on IPv6 networks very convenient and makes changing ISPs easy, too.

You can probably already see some of the potential problems with A6 records. Resolving a domain name to a single IPv6 address may require several independent queries (to look up A6 records for an RIR's domain name, an ISP's domain name, and so on). Completing all of those queries may take many times longer than resolving a domain name's single AAAA record, and if any one of the "subresolutions" fails, the overall resolution process fails.



If a nameserver appears in an NS record and owns one or more A6 records, those A6 records should specify all 128 bits of the IPv6 address. This helps avoid deadlock problems, in which a resolver or nameserver needs to talk to a remote nameserver to resolve part of that nameserver's IPv6 address.

DNAME records and reverse mapping

Now that you've seen how forward mapping works with A6 records, let's look at how reverse-mapping IPv6 addresses works. As with A6 records, unfortunately, this isn't nearly as simple as *ip6.arpa*.

Reverse-mapping IPv6 addresses involves DNAME records, described in RFC 2672, and bitstring labels, introduced in RFC 2673. DNAME records are a little like wildcard CNAME records. They're used to substitute one suffix of a domain name with another. For example, if we previously used the domain name *movieu.edu* at Movie U. but have since changed to *movie.edu*, we can replace the old *movieu.edu* zone with this one:

```
$TTL 1d
@ IN SOA  toystory.movie.edu.  root.movie.edu. (
    2000102300
    3h
    30m
    30d
    1h )
```

```

IN NS toystory.movie.edu.
IN NS wormhole.movie.edu.

IN MX 10 postmanrings2x.movie.edu.

IN DNAME movie.edu.

```

The DNAME record in the *movieu.edu* zone applies to any domain name that ends in *movieu.edu* except *movieu.edu* itself. Unlike the CNAME record, the DNAME record can coexist with other record types owned by the same domain name as long as they aren't CNAME or other DNAME records. The owner of the DNAME record may not have any subdomains, though.

When the *movieu.edu* nameserver receives a query for any domain name that ends in *movieu.edu*, say *cuckoosnest.movieu.edu*, the DNAME record tells it to “synthesize” an alias from *cuckoosnest.movieu.edu* to *cuckoosnest.movie.edu*, replacing *movieu.edu* with *movie.edu*:

```
cuckoosnest.movieu.edu. IN CNAME cuckoosnest.movie.edu.
```

It's a little like *sed*'s “s” (substitute) command. The *movieu.edu* nameserver replies with this CNAME record. If it's responding to a newer nameserver, it also sends the DNAME record in the response, and the recipient nameserver can then synthesize its own CNAME records from the cached DNAME.

Bitstring labels are the other half of the magic involved in IPv6 reverse mapping. Bitstring labels are simply a compact way to represent a long sequence of binary (i.e., one-bit) labels in a domain name. Say you want to permit delegation between any two bits of an IP address. This might compel you to represent each bit of the address as a label in a domain name. But that would require over 128 labels for a domain name that represented an IPv6 address! Oy! That exceeds the limit on the number of labels in a normal domain name!

Bitstring labels concatenate the bits in successive labels into a shorter hexadecimal, octal, binary, or dotted-octet string. The string is encapsulated between the tokens “[” and “]” to distinguish it from a traditional label, and begins with one letter that determines the base of the string: *b* for binary, *o* for octal, and *x* for hexadecimal.

Here are the bitstring labels that correspond to *drunkenmaster.movie.edu*'s two IPv6 addresses:

```

\[x2001db802521000102104bffffe100d24]
\[x2001db806642000102104bffffe100d24]

```

Notice that the most significant bit begins the string, as in the text representation of an IPv6 address, but in the opposite order of the labels in the *in-addr.arpa* domain. Despite this, these two bitstring labels are simply a different encoding of traditional domain names that begin:

```
0.0.1.0.0.1.0.0.1.0.0.1.1.0.0.0.0.0.0.0.1.0.0.0.0.1.1.1.1.1.1.1...
```

Also note that all 32 hex digits in the address are present; you can't drop leading zeros, because there are no colons to separate groups of four digits.

Bitstring labels can also represent parts of IPv6 addresses, in which case you need to specify the number of significant bits in the string, separated from the string by a slash. So RIR 1's portion of the global routing prefix is `\x2001db802/36`.

Together, DNAMES and bitstring labels are used to match portions of a long domain name that encode an IPv6 address and to iteratively change the domain name looked up to a domain name in a zone under the control of the organization that manages the host with that IPv6 address.

Imagine we're reverse-mapping `\x2001db806642000102104bffffe100d24`.`ip6.arpa`, the domain name that corresponds to `drunkenmaster.movie.edu`'s network interface (when reached through RIR 2 and ISP B). The root nameservers would probably refer our nameserver to the `ip6.arpa` nameservers, which contain these records:

```
$ORIGIN ip6.arpa.
\x2001db802/36 IN DNAME ip6.rir-1.net.
\x2001db806/36 IN DNAME ip6.rir-2.net.
```

The second of these matches the beginning of the domain name we're looking up, so the `ip6.arpa` nameservers reply to our nameserver with an alias that says:

```
\x2001db806642000102104bffffe100d24].ip6.arpa. IN CNAME
\x642000102104bffffe100d24].ip6.rir-2.net.
```

Notice that the first nine hex digits (the most significant 36 bits) of the address are stripped off, and the end of the target of the alias is now `ip6.rir-2.net`, since we know this address belongs to RIR 2. In `ip6.rir-2.net`, we find:

```
$ORIGIN ip6.rir-2.net.
\x6/4 IN DNAME ip6.isp-b.net.
```

This turns the domain name in our new query:

```
\x642000102104bffffe100d24].ip6.rir-2.net
```

into:

```
\x42000102104bffffe100d24].ip6.isp-b.net
```

Next, our nameserver queries the `ip6.isp-b.net` nameservers for the new domain name. This record in the `ip6.isp-b.net` zone:

```
$ORIGIN ip6.isp-b.net.
\x42/8 IN DNAME ip6.movie.edu.
```

turns the domain name we're looking up into:

```
\x000102104bffffe100d24].ip6.movie.edu
```

The `ip6.movie.edu` zone, finally, contains the PTR record that gives us the domain name of the host we're after:

```
$ORIGIN ip6.movie.edu.
\x000102104bffffe100d24/80 IN PTR drunkenmaster.ip6.movie.edu.
```

(Though we could have used another DNAME just for subnet1, we didn't.)

Mercifully, as a zone administrator you'll probably only be responsible for maintaining PTR records like the ones in *ip6.movie.edu*. Even if you work for an RIR or ISP, creating DNAME records that extract the appropriate bits of the global routing prefix from your customers' addresses isn't too tough. And you gain the convenience of using a single zone datafile for your reverse-mapping information, even though each of your hosts has multiple addresses and can switch ISPs without changing all of your zone datafiles.

EXHIBIT JZ-6



OPINION

What is DNS and how does it work?

The Domain Name System resolves the names of internet sites with their underlying IP addresses adding efficiency and even security in the process.

By Keith Shaw

Network World |

APR 11, 2018 8:39 AM PT

The Domain Name System (DNS) is one of the foundations of the internet, yet most people outside of networking probably don't realize they use it every day to do their jobs, check their email or waste time on their smartphones.

At its most basic, DNS is a directory of names that match with numbers. The numbers, in this case are IP addresses, which computers use to communicate with each other. Most descriptions of DNS use the analogy of a phone book, which is fine for people over the age of 30 who know what a phone book is.

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If you're under 30, think of DNS like your smartphone's contact list, which matches people's names with their phone numbers and email addresses. Then multiply that contact list by everyone else on the planet.

When the internet was very, very small, it was easier for people to correspond specific IP addresses with specific computers, but that didn't last for long as more devices and people joined the growing network. In addition to creating a directory for all of these devices, words were used to let people connect to different sites; for most people, remembering words is easier than remembering specific sets of numbers. It is still possible to type in a specific IP address into a browser to reach a website.

How DNS servers work

The DNS directory that matches name to numbers isn't located all in one place in some dark corner of the internet. Like the internet itself, the directory is distributed around the world, stored on domain name servers that all

Communicate with each other on a very regular basis to provide updates and redundancies. With more than 332 million domain names listed at the end of 2017, a single directory would be very large indeed.

Each named site can correspond to more than one IP address. In fact, some sites have hundreds or more IP addresses that correspond with a single domain name. For example, the server your computer reaches for www.google.com is likely completely different from the server that someone in another country would reach by typing the same site name into their browser.

Another reason for the distributed nature of the directory is the amount of time it would take for you to get a response when you were looking for a site if there was only one location for the directory, shared among the millions, probably billions, of people also looking for information at the same time. That's one long line to use the phone book.

Instead, DNS information is shared among many servers, but is also cached locally on client computers. Chances are that you use google.com several times a day. Instead of your computer querying the DNS name server for the IP address of google.com every time, that information is saved on your computer so it doesn't have to access a DNS server to resolve the name with its IP address. Additional caching can occur on the routers used to connect clients to the internet, as well as on the servers of the user's Internet Service Provider (ISP). With so much caching going on, the number of queries that actually make it to DNS name servers is a lot lower than it would seem.

How DNS adds efficiency

DNS is organized in a hierarchy that helps keep things running quickly and smoothly. To illustrate, let's pretend that you wanted to visit networkworld.com.

The initial request for the IP address is made to a recursive resolver, a server that is usually operated by an ISP or other third-party provider. The recursive resolver knows which other DNS servers it needs to ask to resolve the name of a site (networkworld.com) with its IP address. This search leads to a root server, which knows all the information about top-level domains, such as .com, .net, .org and all of those country domains like .cn (China) and .uk (United Kingdom). Root servers are located all around the world, so the system usually directs you to the closest one geographically.

Once the request reaches the correct root server, it goes to a top-level domain (TLD) name server, which stores the information for the second-level domain, the words used before you get to the .com, .org, .net (for example, that information for networkworld.com is “networkworld”). The request then goes to the Domain Name Server, which holds the information about the site and its IP address. Once the IP address is discovered, it is sent back to the client, which can now use it to visit the website. All of this takes mere milliseconds.

Because DNS has been working for the past 30+ years, most people take it for granted. Security also wasn't considered when building the system, so [hackers have taken full advantage of this](#), creating a variety of attacks.

DNS reflection attacks

DNS reflection attacks can swamp victims with high-volume messages from DNS resolver servers. Attackers request large DNS files from all the open DNS resolvers they can find and do so using the spoofed IP address of the victim. When the resolvers respond, the victim receives a flood of unrequested DNS data that overwhelms their machines.

DNS cache poisoning

DNS cache poisoning can divert users to malicious Web sites. Attackers manage to insert false address records into the DNS so when a potential victim requests an address resolution for one of the poisoned sites, the DNS responds with the IP address for a different site, one controlled by the attacker. Once on these phony sites, victims may be tricked into giving up passwords or suffer malware downloads.

DNS resource exhaustion

DNS resource exhaustion attacks can clog the DNS infrastructure of ISPs, blocking the ISP's customers from reaching sites on the internet. This can be done by attackers registering a domain name and using the victim's name server as the domain's authoritative server. So if a recursive resolver can't supply the IP address associated with the site name, it will ask the name server of the victim. Attackers generate large numbers of requests for their domain and toss in non-existent subdomains to boot, which leads to a torrent of resolution requests being fired at the victim's name server, overwhelming it.

What is DNSSEC?

DNS Security Extensions is an effort to make the communication among the various levels of servers involved in DNS lookups more secure. It was devised by the Internet Corporation for Assigned Names and Numbers (ICANN), the organization in charge of the DNS system.

ICANN became aware of weaknesses in the communication between the DNS top-level, second-level and third-level directory servers that could allow attackers to hijack lookups. That would allow the attackers to respond to requests for lookups to legitimate sites with the IP address for malicious sites. These sites could upload malware to users or carry out phishing and pharming attacks.

DNSSEC would address this by having each level of DNS server digitally sign its requests, which insures that the requests sent in by end users aren't commandeered by attackers. This creates a chain of trust so that at each step in the lookup, the integrity of the request is validated.

In addition, DNSSec can determine if domain names exist, and if one doesn't, it won't let that fraudulent domain be delivered to innocent requesters seeking to have a domain name resolved.

As more domain names are created, and more devices continue to join the network via internet of things devices and other "smart" systems, and as more sites migrate to IPv6, maintaining a healthy DNS ecosystem will be required. The growth of big data and analytics also brings a greater need for DNS management.

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[®] *Keith Shaw is a freelance digital journalist who has written about the IT world for more than 20 years.*

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EXHIBIT JZ-7

Network Working Group
Request for Comments: 920

J. Postel
J. Reynolds
ISI
October 1984

Domain Requirements

Status of this Memo

This memo is a policy statement on the requirements of establishing a new domain in the ARPA-Internet and the DARPA research community. This is an official policy statement of the IAB and the DARPA. Distribution of this memo is unlimited.

Introduction

This memo restates and refines the requirements on establishing a Domain first described in [RFC-881](#) [1]. It adds considerable detail to that discussion, and introduces the limited set of top level domains.

The Purpose of Domains

Domains are administrative entities. The purpose and expected use of domains is to divide the name management required of a central administration and assign it to sub-administrations. There are no geographical, topological, or technological constraints on a domain. The hosts in a domain need not have common hardware or software, nor even common protocols. Most of the requirements and limitations on domains are designed to ensure responsible administration.

The domain system is a tree-structured global name space that has a few top level domains. The top level domains are subdivided into second level domains. The second level domains may be subdivided into third level domains, and so on.

The administration of a domain requires controlling the assignment of names within that domain and providing access to the names and name related information (such as addresses) to users both inside and outside the domain.

General Purpose Domains

While the initial domain name "ARPA" arises from the history of the development of this system and environment, in the future most of the top level names will be very general categories like "government", "education", or "commercial". The motivation is to provide an organization name that is free of undesirable semantics.

After a short period of initial experimentation, all current ARPA-Internet hosts will select some domain other than ARPA for their future use. The use of ARPA as a top level domain will eventually cease.

Initial Set of Top Level Domains

The initial top level domain names are:

Temporary

ARPA = The current ARPA-Internet hosts.

Categories

GOV = Government, any government related domains meeting the second level requirements.

EDU = Education, any education related domains meeting the second level requirements.

COM = Commercial, any commercial related domains meeting the second level requirements.

MIL = Military, any military related domains meeting the second level requirements.

ORG = Organization, any other domains meeting the second level requirements.

Countries

The English two letter code (alpha-2) identifying a country according to the ISO Standard for "Codes for the Representation of Names of Countries" [5].

Multiorganizations

A multiorganization may be a top level domain if it is large, and is composed of other organizations; particularly if the multiorganization can not be easily classified into one of the categories and is international in scope.

Possible Examples of Domains

The following examples are fictions of the authors' creation, any similarity to the real world is coincidental.

The UC Domain

It might be that a large state wide university with, say, nine campuses and several laboratories may want to form a domain. Each campus or major off-campus laboratory might then be a subdomain, and within each subdomain, each department could be further distinguished. This university might be a second level domain in the education category.

One might see domain style names for hosts in this domain like these:

```
LOCUS.CS.LA.UC.EDU
CCN.OAC.LA.UC.EDU
ERNIE.CS.CAL.UC.EDU
A.S1.LLNL.UC.EDU
A.LAND.LANL.UC.EDU
NMM.LBL.CAL.UC.EDU
```

The MIT Domain

Another large university may have many hosts using a variety of machine types, some even using several families of protocols. However, the administrators at this university may see no need for the outside world to be aware of these internal differences. This university might be a second level domain in the education category.

One might see domain style names for hosts in this domain like these:

```
APIARY-1.MIT.EDU
BABY-BLUE.MIT.EDU
CEZANNE.MIT.EDU
DASH.MIT.EDU
```

MULTICS.MIT.EDU
TAC.MIT.EDU
XX.MIT.EDU

The CSNET Domain

There may be a consortium of universities and industry research laboratories called, say, "CSNET". This CSNET is not a network per se, but rather a computer mail exchange using a variety of protocols and network systems. Therefore, CSNET is not a network in the sense of the ARPANET, or an Ethernet, or even the ARPA-Internet, but rather a community. Yet it does, in fact, have the key property needed to form a domain; it has a responsible administration. This consortium might be large enough and might have membership that cuts across the categories in such a way that it qualifies under the "multiorganization rule" to be a top level domain.

One might see domain style names for hosts in this domain like these:

CIC.CSNET
EMORY.CSNET
GATECH.CSNET
HP-LABS.CSNET
SJ.IBM.CSNET
UDEL.CSNET
UWISC.CSNET

General Requirements on a Domain

There are several requirements that must be met to establish a domain. In general, it must be responsibly managed. There must be a responsible person to serve as an authoritative coordinator for domain related questions. There must be a robust domain name lookup service, it must be of at least a minimum size, and the domain must be registered with the central domain administrator (the Network Information Center (NIC) Domain Registrar).

Responsible Person:

An individual must be identified who has authority for the administration of the names within the domain, and who seriously takes on the responsibility for the behavior of the hosts in the domain, plus their interactions with hosts outside the domain. This person must have some technical expertise and the authority within the domain to see that problems are fixed.

If a host in a given domain somehow misbehaves in its interactions with hosts outside the domain (e.g., consistently violates protocols), the responsible person for the domain must be competent and available to receive reports of problems, take action on the reported problems, and follow through to eliminate the problems.

Domain Servers:

A robust and reliable domain server must be provided. One way of meeting this requirement is to provide at least two independent domain servers for the domain. The database can, of course, be the same. The database can be prepared and copied to each domain server. But, the servers should be in separate machines on independent power supplies, et cetera; basically as physically independent as can be. They should have no common point of failure.

Some domains may find that providing a robust domain service can most easily be done by cooperating with another domain where each domain provides an additional server for the other.

In other situations, it may be desirable for a domain to arrange for domain service to be provided by a third party, perhaps on hosts located outside the domain.

One of the difficult problems in operating a domain server is the acquisition and maintenance of the data. In this case, the data are the host names and addresses. In some environments this information changes fairly rapidly and keeping up-to-date data may be difficult. This is one motivation for sub-domains. One may wish to create sub-domains until the rate of change of the data in a sub-domain domain server database is easily managed.

In the technical language of the domain server implementation the data is divided into zones. Domains and zones are not necessarily one-to-one. It may be reasonable for two or more domains to combine their data in a single zone.

The responsible person or an identified technical assistant must understand in detail the procedures for operating a domain server, including the management of master files and zones.

The operation of a domain server should not be taken on lightly. There are some difficult problems in providing an adequate service, primarily the problems in keeping the database up to date, and keeping the service operating.

The concepts and implementation details of the domain server are given in RFC-882 [2] and RFC-883 [3].

Minimum Size:

The domain must be of at least a minimum size. There is no requirement to form a domain because some set of hosts is above the minimum size.

Top level domains must be specially authorized. In general, they will only be authorized for domains expected to have over 500 hosts.

The general guideline for a second level domain is that it have over 50 hosts. This is a very soft "requirement". It makes sense that any major organization, such as a university or corporation, be allowed as a second level domain -- even if it has just a few hosts.

Registration:

Top level domains must be specially authorized and registered with the NIC domain registrar.

The administrator of a level N domain must register with the registrar (or responsible person) of the level N-1 domain. This upper level authority must be satisfied that the requirements are met before authorization for the domain is granted.

The registration procedure involves answering specific questions about the prospective domain. A prototype of what the NIC Domain Registrar may ask for the registration of a second level domain is shown below. These questions may change from time to time. It is the responsibility of domain administrators to keep this information current.

The administrator of a domain is required to make sure that host and sub-domain names within that jurisdiction conform to the standard name conventions and are unique within that domain.

If sub-domains are set up, the administrator may wish to pass along some of his authority and responsibility to a sub-domain administrator. Even if sub-domains are established, the responsible person for the top-level domain is ultimately responsible for the whole tree of sub-domains and hosts.

This does not mean that a domain administrator has to know the

details of all the sub-domains and hosts to the Nth degree, but simply that if a problem occurs he can get it fixed by calling on the administrator of the sub-domain containing the problem.

Top Level Domain Requirements

There are very few top level domains, each of these may have many second level domains.

An initial set of top level names has been identified. Each of these has an administrator and an agent.

The top level domains:

ARPA = The ARPA-Internet *** TEMPORARY ***

Administrator: DARPA
Agent: The Network Information Center
Mailbox: HOSTMASTER@SRI-NIC.ARPA

GOV = Government

Administrator: DARPA
Agent: The Network Information Center
Mailbox: HOSTMASTER@SRI-NIC.ARPA

EDU = Education

Administrator: DARPA
Agent: The Network Information Center
Mailbox: HOSTMASTER@SRI-NIC.ARPA

COM = Commercial

Administrator: DARPA
Agent: The Network Information Center
Mailbox: HOSTMASTER@SRI-NIC.ARPA

MIL = Military

Administrator: DDN-PMO
Agent: The Network Information Center
Mailbox: HOSTMASTER@SRI-NIC.ARPA

ORG = Organization

Administrator: DARPA
Agent: The Network Information Center
Mailbox: HOSTMASTER@SRI-NIC.ARPA

Countries

The English two letter code (alpha-2) identifying a country according to the ISO Standard for "Codes for the Representation of Names of Countries" [5].

As yet no country domains have been established. As they are established information about the administrators and agents will be made public, and will be listed in subsequent editions of this memo.

Multiorganizations

A multiorganization may be a top level domain if it is large, and is composed of other organizations; particularly if the multiorganization can not be easily classified into one of the categories and is international in scope.

As yet no multiorganization domains have been established. As they are established information about the administrators and agents will be made public, and will be listed in subsequent editions of this memo.

Note: The NIC is listed as the agent and registrar for all the currently allowed top level domains. If there are other entities that would be more appropriate agents and registrars for some or all of these domains then it would be desirable to reassign the responsibility.

Second Level Domain Requirements

Each top level domain may have many second level domains. Every second level domain must meet the general requirements on a domain specified above, and be registered with a top level domain administrator.

Third through Nth Level Domain Requirements

Each second level domain may have many third level domains, etc. Every third level domain (through Nth level domain) must meet the requirements set by the administrator of the immediately higher level domain. Note that these may be more or less strict than the general requirements. One would expect the minimum size requirements to decrease at each level.

The ARPA Domain

At the time the implementation of the domain concept was begun it was thought that the set of hosts under the administrative authority of DARPA would make up a domain. Thus the initial domain selected was called ARPA. Now it is seen that there is no strong motivation for there to be a top level ARPA domain. The plan is for the current ARPA domain to go out of business as soon as possible. Hosts that are currently members of the ARPA domain should make arrangements to join another domain. It is likely that for experimental purposes there will be a second level domain called ARPA in the ORG domain (i.e., there will probably be an ARPA.ORG domain).

The DDN Hosts

DDN hosts that do not desire to participate in this domain naming system will continue to use the HOSTS.TXT data file maintained by the NIC for name to address translations. This file will be kept up to date for the DDN hosts. However, all DDN hosts will change their names from "host.ARPA" to (for example) "host.DDN.MIL" some time in the future. The schedule for changes required in DDN hosts will be established by the DDN-PMO.

Impact on Hosts

What is a host administrator to do about all this?

For existing hosts already operating in the ARPA-Internet, the best advice is to sit tight for now. Take a few months to consider the options, then select a domain to join. Plan carefully for the impact that changing your host name will have on both your local users and on their remote correspondents.

For a new host, careful thought should be given (as discussed below). Some guidance can be obtained by comparing notes on what other hosts with similar administrative properties have done.

The owner of a host may decide which domain to join, and the

administrator of a domain may decide which hosts to accept into his domain. Thus the owner of a host and a domain administrator must come to an understanding about the host being in the domain. This is the foundation of responsible administration.

For example, a host "XYZ" at MIT might possibly be considered as a candidate for becoming any of XYZ.ARPA.ORG, XYZ.CSNET, or XYZ.MIT.EDU.

The owner of host XYZ may choose which domain to join, depending on which domain administrators are willing to have him.

The domain is part of the host name. Thus if USC-ISIA.ARPA changes its domain affiliation to DDN.MIL to become USC-ISIA.DDN.MIL, it has changed its name. This means that any previous references to USC-ISIA.ARPA are now out of date. Such old references may include private host name to address tables, and any recorded information about mailboxes such as mailing lists, the headers of old messages, printed directories, and peoples' memories.

The experience of the DARPA community suggests that changing the name of a host is somewhat painful. It is recommended that careful thought be given to choosing a new name for a host - which includes selecting its place in the domain hierarchy.

The Roles of the Network Information Center

The NIC plays two types of roles in the administration of domains. First, the NIC is the registrar of all top level domains. Second the NIC is the administrator of several top level domains (and the registrar for second level domains in these).

Top Level Domain Registrar

As the registrar for top level domains, the NIC is the contact point for investigating the possibility of establishing a new top level domain.

Top Level Domain Administrator

For the top level domains designated so far, the NIC is the administrator of each of these domains. This means the NIC is responsible for the management of these domains and the registration of the second level domains or hosts (if at the second level) in these domains.

It may be reasonable for the administration of some of these domains to be taken on by other authorities in the future. It is certainly not desired that the NIC be the administrator of all top level domains forever.

Prototypical Questions

To establish a domain, the following information must be provided to the NIC Domain Registrar (`HOSTMASTER@SRI-NIC.ARPA`):

Note: The key people must have computer mail mailboxes and NIC-Idents. If they do not at present, please remedy the situation at once. A NIC-Ident may be established by contacting `NIC@SRI-NIC.ARPA`.

- 1) The name of the top level domain to join.

For example: EDU

- 2) The name, title, mailing address, phone number, and organization of the administrative head of the organization. This is the contact point for administrative and policy questions about the domain. In the case of a research project, this should be the Principal Investigator. The online mailbox and NIC-Ident of this person should also be included.

For example:

Administrator

Organization	USC/Information Sciences Institute
Name	Keith Uncapher
Title	Executive Director
Mail Address	USC/ISI <code>4676 Admiralty Way, Suite 1001</code> <code>Marina del Rey, CA. 90292-6695</code>
Phone Number	<code>213-822-1511</code>
Net Mailbox	<code>Uncapher@USC-ISIB.ARPA</code>
NIC-Ident	KU

- 3) The name, title, mailing address, phone number, and organization of the domain technical contact. The online mailbox and NIC-Ident of the domain technical contact should also be included. This is the contact point for problems with the domain and for updating information about the domain. Also, the domain technical contact may be responsible for hosts in this domain.

For example:

Technical Contact

Organization	USC/Information Sciences Institute
Name	Craig Milo Rogers
Title	Researcher
Mail Address	USC/ISI 4676 Admiralty Way, Suite 1001 Marina del Rey, CA. 90292-6695
Phone Number	213-822-1511
Net Mailbox	Rogers@USC-ISIB.ARPA
NIC-Ident	CMR

4) The name, title, mailing address, phone number, and organization of the zone technical contact. The online mailbox and NIC-Ident of the zone technical contact should also be included. This is the contact point for problems with the zone and for updating information about the zone. In many cases the zone technical contact and the domain technical contact will be the same person.

For example:

Technical Contact

Organization	USC/Information Sciences Institute
Name	Craig Milo Rogers
Title	Researcher
Mail Address	USC/ISI 4676 Admiralty Way, Suite 1001 Marina del Rey, CA. 90292-6695
Phone Number	213-822-1511
Net Mailbox	Rogers@USC-ISIB.ARPA
NIC-Ident	CMR

5) The name of the domain (up to 12 characters). This is the name that will be used in tables and lists associating the domain and the domain server addresses. [While technically domain names can be quite long (programmers beware), shorter names are easier for people to cope with.]

For example: ALPHA-BETA

6) A description of the servers that provides the domain service for translating name to address for hosts in this domain, and the date they will be operational.

A good way to answer this question is to say "Our server is supplied by person or company X and does whatever their standard issue server does".

For example: Our server is a copy of the server operated by the NIC, and will be installed and made operational on 1-November-84.

7) A description of the server machines, including:

(a) hardware and software (using keywords from the Assigned Numbers)

(b) addresses (what host on what net for each connected net)

For example:

(a) hardware and software

VAX-11/750 and UNIX, or
IBM-PC and MS-DOS, or
DEC-1090 and TOPS-20

(b) address

10.9.0.193 on ARPANET

8) An estimate of the number of hosts that will be in the domain.

- (a) initially,
- (b) within one year,
- (c) two years, and
- (d) five years.

For example:

(a) initially = 50
(b) one year = 100
(c) two years = 200
(d) five years = 500

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Ruling the Root: Internet Governance and the Taming of Cyberspace



Ruling the Root: Internet Governance and the Taming of Cyberspace

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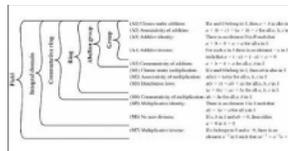
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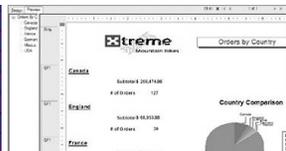
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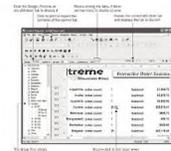
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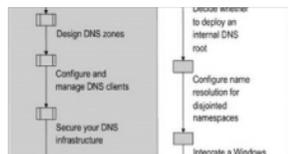
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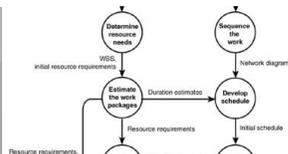
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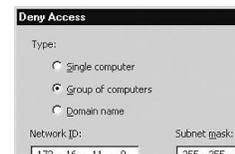


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6.1 Endowment: Commercial Use and the World Wide Web

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< Day Day Up >

By mid-1990 it had become evident that the Internet was outgrowing its research and education roots. TCP/IP was becoming the long-awaited open platform for global data networking. Regional networks and the NSFNET backbone operator were beginning to eye a potential commercial market for Internet access. By 1990 some of the mid-level networks had formed commercial Internet service providers (ISPs) to operate alongside their subsidized regional networks. ^[1]

6.1.1 A Market for Internet Access

In May 1991, after much public and private discussion of commercialization and privatization, the National Science Foundation (NSF) permitted commercial traffic to cross the NSFNET, provided that certain stipulations regarding cost recovery, surplus revenues, and quality of service were followed. ^[2] But the commingling of commercial and noncommercial traffic and providers posed serious policy dilemmas for NSF.

In 1993, NSF responded to the problem by moving to an entirely new architecture for the Internet. ^[3] The agency withdrew from backbone support altogether and tried to facilitate a commercial marketplace for Internet access composed of multiple, competing backbone providers. Commercial ISPs would be interconnected at five NSF-designated and partially supported network access points (NAPs). ^[4] The new architecture went into effect in 1995, and NSFNET was decommissioned in April of that year. The transition was so successful that no one noticed; indeed, within a few years of the changeover the NAPs' role as interconnection points had been minimized because most ISPs began to rely on private contracting with backbone and transit providers for most of their interconnection.

The supply of Internet connectivity by a commercial market was a major stimulus to the demand for domain names. For the new ISPs, domain name registration and IP address assignment became required inputs into their service provision and thus acquired commercial value. Ordinary households and businesses joining the Internet brought a consumer mentality rather than a technical-engineering perspective to the selection and utilization of domain names.

6.1.2 The WWW: Domain Names Transformed

The most dramatic stimulus to the demand for domain names came from the emergence of the World Wide Web between 1990 and 1995. The World Wide Web was a client-server software application that made the Internet easier to navigate and more fun to use by linking and displaying documents (or other objects stored on networked computers) by means of a graphical user interface. The software code for Web servers and the first portable browser were created by European physicists at CERN in 1990 (Cailliau 1995). The Web was popularized by the public release of a graphical browser called Mosaic in early 1993 by the National Center for Supercomputer Applications in the United States. ^[5]

Only a year after its release, in January 1994, there were 20 million WWW users, 95 percent of them using Mosaic. The World Wide Web's hypertext transfer protocol (HTTP) had become the second most popular protocol on the Net, measured in terms of packet and byte counts on the NSFNET backbone. ^[6] After one more year, in early 1995, the World Wide Web passed the venerable file transfer protocol (ftp) as the application generating the most traffic on NSFNET. With the founding of Netscape in 1994, browsers and Web software became a commercial industry. Netscape released its first Navigator browser at the beginning of 1995 and quickly displaced Mosaic. Microsoft rushed Internet Explorer to market at the end of the year. With user-friendly, point-and-click navigation available, the Internet attracted a much broader base of users,

including household consumers and small businesses. The Internet had suddenly become a mass medium for communication and commerce.

A quantum change now took place in the status of domain names. The Web had its own addressing standard, known as Uniform Resource Locators (URLs). URLs were designed to work like a networked extension of the familiar computer file name. Web documents or other resources were given names within a hierarchical directory structure, with directories separated by slashes. In order to take advantage of the global connectivity available over the Internet, URLs used a domain name as the top-level directory. The basic syntax of a URL could be represented thus:

http://<domain name>/<directory or resource name>/<directory or resource name>/etc . . .

The hierarchy to the right of the domain name could be as shallow or as deep as the person in charge of the Web site wanted. URLs were never intended to be visible to end users. The Web's inventors thought they would hide behind hyperlinks.

By using domain names as the starting point of URLs, the Web altered their function in profound and unanticipated ways. As the term *resource locator* suggests, Web addresses were names for *resources*, which meant *any* kind of object that might be placed on the Web: documents, images, downloadable files, services, mailboxes, and so on. Domain names, in contrast, had been originally intended to name host computers, machines on the Net. And URLs were not just addresses but locators of content. A user only needed to type a name into the URL window of a browser and (if it was a valid address) HTTP would fetch the corresponding resource and display it in the browser. A URL included 'explicit instructions on how to access the resource on the Internet' (Berners-Lee 1994). Domain names, in contrast, were originally conceived as locators of IP addresses or other resource records of interest to the *network*, not of things that people would be interested in seeing.

As the Web made it easy to create and publish documents or other resources on the Internet, the number of Web pages began to grow even faster than the number of users. It did not take users long to discover that shorter, shallower URLs were easier to use, remember, and advertise than longer ones. The shortest URL of all, of course, was a straight, unadorned domain name. Thus, if one wanted to post a distinct set of resources on the Web or create an identity for an organization, product, or idea, it made sense to register a separate domain name for it rather than creating a new directory under a single domain name. For example, a car manufacturer like General Motors with many different brand or product names such as Buick or Oldsmobile eventually learned to just register *buick.com* and use that as the URL rather than *gm.com/cars/buick/*, even if all the information resided on a single computer. The DNS protocol made it fairly easy to point multiple domain names at the same computer, so there was not much waste of physical resources. Domain names began to refer to content resources rather than just network resources.

As more and more users began to type domain names into their browsers' URL windows, yet another fateful transformation of domain names' function occurred. Many novice users did not understand the hierarchical structure of the domain name system (DNS) and simply typed in the name of something they wanted. The Internet would interpret this simple name as an invalid domain and return an error message. As a user-friendly improvement in Web browser software, the browser manufacturers began to use *.com* as the default value for a name typed in with no top-level extension. If the user typed 'cars' into the URL window, for example, instead of returning an error message the browser would automatically append *.com* to the end and *www.* to the beginning, and display to the user the Web site at *www.cars.com*. In doing so, the browser manufacturers reinforced the naive end user's tendency to treat domain names as a kind of directory of the Internet. This practice also massively increased the economic value of domain names registered under the *.com* top-level domain. For millions of impatient or naive users wary of search engines and other more complicated location methods, the default values turned the DNS into a search engine exclusively devoted to words registered under the *.com* domain.

Although it would take several years for the full economic effects to be felt, the 'Webification' of domain names was the critical step in the endowment of the name space with economic value. It massively increased the demand for domain name registrations and gave common, famous, or generic terms under the *.com* space the commercially valuable property of being able to effortlessly deliver thousands if not millions of Web site 'hits.'

A serendipitous intersection of technologies produced human and market factors that transformed one technology's function. The transformation of domain names was driven by rational economic concerns about visibility in an emerging global marketplace. In the early days of the Web, a simple, intuitive name in the *.com* space might generate millions of viewers with very little investment. If someone else controlled 'your' name in that space, your reputation or customer base might suffer. Thus, for economic and legal reasons, DNS policy has ever since been fixed upon the use of domain names as locators of Web sites. The forms of regulation and administration being imposed on DNS by ICANN are largely based on the assumption that DNS is used exclusively for that purpose.

Technologists who object that 'DNS was never designed to be used this way' are correct in a narrow sense but miss the larger point. Many technologies end up being used in ways that their designers never intended or visualized. These unanticipated uses in turn can generate inflection points in a technology's evolution by provoking new forms of economic activity and new forms of regulation. This in turn can reward certain technological capabilities and effectively foreclose others.

Table 6.1: Number of InterNIC Domain Name Registrations, July 1994 and February 1996

No. of Second-Level Registrations		

No. of Second-Level Registrations		
Top-Level Domain	July 1994	February 1996
.com	12,687	232,004
.edu	1,292	2,463
.org	1,388	17,775
.net	545	10,890
.gov	202	460
Other	=	168
Total	16,114	263,760

Sources: For 1994-Network Wizards Internet Domain Survey, <<http://www.isc.org/ds/WWW-9501/second-levels.html>>; for 1996-Registration Services Performance Measures for February 1996, <http://www.networksolutions.com/en_US/legal/internic/coop-stats/feb96.html>.

6.1.3 Charging for Domain Names

The cooperative agreement between the National Science Foundation and Network Solutions (NSI) for registration services was concluded just months before the Web's sudden transformation of domain names.

Neither party to the transaction had any idea of what was in store for them. Post-Web, the new registry was faced with a huge increase in the volume of registrations, and almost all of the increase was concentrated in the .com top-level domain. Registration applications handled by Network Solutions went from 300 per month in 1992 to 1,500 per month in mid-1994, then to over 30,000 per month in late 1995. The statistics in table 6.1 show the growth in the total number of names registered by the Inter-NIC (see section 5.5.2) from July 1994 to February 1996, as well as the dominant role of .com registrations in accounting for that growth.

NSF had no charter to support commercial registrations. A report by Jon Postel to the Internet Architecture Board in October 1994 observed that 'NSF is getting tired of paying for 2,000 .com registrations per month, each one taking about four minutes of someone's time, allowing for little to no screening of the requests.'^[7] NSF held consultative discussions on charging for domain names, and an expert advisory panel brought in to evaluate the performance of the InterNIC contractors concluded in a December 1994 report that Network Solutions should 'begin charging for .COM domain name registrations, and later charge for name registrations in all domains.'^[8] Shortly after the decision to charge was made, a multibillion-dollar Washington-area defense contractor, Science Applications International Corporation (SAIC), purchased Network Solutions. The transaction was concluded in March 1995. In a letter from NSF to Network Solutions dated September 13, 1995, Amendment 4 to the cooperative agreement officially authorized the registry to charge fees for domain name registrations in .com, .net, and .org.^[9] Initial registration of a name would cost US\$100 and last for two years; annual renewal after the two-year period would cost US\$50. Thirty percent of the registration fee would go into an 'intellectual infrastructure fund' at the disposal of the NSF. NSF would continue to pay for .edu registrations and on an interim basis for .gov. The charges went into effect September 14, 1995.

The Web and the commercialization of Internet access stimulated the development of a domain name market in other countries as well. In England, commercial ISPs arose in the early 1990s and formed an organization known as the London Internet Exchange (LINX). In order to meet the ISPs' demand for domain names for their customers, a registry was operated by a voluntary 'naming committee' that included the designated technical contact for the .uk top-level domain, Dr. William Black, and volunteers from various LINX members. No charge was levied by the naming committee for domain name registration. By 1996, however, the need for a more professional, well-defined, and open service for registrations in .uk prompted the creation of Nominet UK, a new nonprofit corporation. Nominet was organized as a wholesaler of domain names to ISPs, with the initial fee set at 60 pence for each two-year period. In Germany the .de registry was run by universities until late in 1996, when a consortium of ISPs formed DENIC. Asian and developing country registries, however, tended to remain closely tied to their roots in universities and government science and technology ministries for a longer period of time. As of March 1997 registries serving 67 of the world's country code top-level domains (ccTLDs) charged fees for domain name registration.^[10] None of them, however, were operating at anything near the scale of the InterNIC.

6.1.4 The Name Space as Common Pool Resource

The InterNIC's response to the Web explosion turned the generic top-level domain name space into a common pool resource. The massive increase in the volume of registrations undermined the feasibility of any administrative rationing rules except first-come/first-served.

The complete opening up of domain name registrations was not quite a deliberate policy decision, but it was the only option, given the pressures of growth and the prior commitment to accommodating the widest diffusion of the Internet. The costs created by registrations quickly exceeded the staff and budget constraints of the InterNIC cooperative agreement. Network Solutions was using funds from other projects to cover the cost of the staff, office space, phone systems, and computers

needed to keep up. The InterNIC could not keep up with growth if it attempted to review and police registration applications. As a former worker put it, 'In growth from 400 requests per day total-including new, modify and delete for domains, contact updates, host updates-to 25,000 and up per day, much of the focus became turn-around time and protection of data being updated via authentication. Policing was not given much priority under the technology and funding constraints. The whole registration process/budget was not designed for vanity-tagging the Internet.'^[11]

As the process of registering a domain name was accelerated and automated, the InterNIC abandoned previous attempts to enforce a rule of one domain name per person.^[12] It also gave up any attempt to maintain distinctions between the types of registrants that were allowed to use names in *.com*, *.net*, and *.org*.^[13] It was not possible for InterNIC to decide whether a particular applicant had a 'right' to the specific name he was trying to register. Any such reviews, which would require manual handling of applications, would have slowed the execution of domain name registrations to a trickle, creating a bigger and bigger backlog.

Thus, the InterNIC's part of the name space became a common pool resource. Individuals appropriated units of the resource (they registered second-level names) using the rule of capture. There were almost no economic or legal constraints on appropriation. A user could register any name she wanted and take any number of names. Until September 1995 names could be registered at no charge (although users who relied on Internet service providers might incur registration-related service charges). Even after fees were imposed, it took months for Network Solutions to begin billing and much longer to collect effectively.^[14] Once it was implemented, the fee for registration was trivial compared to the perceived economic value of many names. And the prices were the same for all names, regardless of the variations in their value. The source of the economic value, of course, was a name's ability to deliver the browser-using public to a particular Web site.

The Web set in motion a positive feedback loop that led to the overwhelming dominance of the domain name market by *.com*, *.net*, and *.org* for the rest of the decade. The initial flood of registrations under *.com* encouraged browser programs to make it the default. The browser defaults vested *.com* registrations with a special value. That value encouraged individuals to appropriate names in *.com*, leading to even faster growth in that domain. The large number of registrations in *.com* reinforced the expectations of the user public that most of the content on the Web would be registered under *.com*, making it more likely that users would look for sites there. That further accelerated the demand for *.com* registrations, continuing the cycle. The *.net* and *.org* domains became second-best options for those who could not get *.com* or a way of protecting the exclusivity of a *.com* registration through multiple registrations. As the number of registrations exploded, it became less and less feasible to discriminate among applications.

The global dominance of *.com* was further reinforced by the more restrictive approaches to registration taken in most other countries. While the InterNIC strained and struggled to accommodate demand, registries in many other countries imposed rigid rules on who could get a domain name and how many they could get. Whereas *.com* opened up the second level of the hierarchy to any taker, many country codes created naming conventions at the second level that users were forced to fit into. Japan and France, for example, heavily restricted eligibility for domain names and tried to fit all registrations into predetermined hierarchies.^[15] The *.com*, *.net*, and *.org* domains also were more attractive to businesses seeking a global audience because of their generic character. Thus, by July 1995 there were two and a half times as many host computers under the Inter-NIC domains (3.92 million) as there were in the seven largest country domains combined (1.52 million in Great Britain, Japan, Germany, Australia, Canada, Netherlands and France).^[16] The U.K. registry, the second largest in the world at the end of 1996, was fielding 3,000 to 4,000 registrations a month; Network Solutions was registering 75,000 to 85,000.^[17]

As late as 1999 more French organizations were registered under *.com* than under *.fr*. As of late 2000 barely 200,000 domains were registered under *.jp* (Japan), fewer than the *.com* domain in January 1996.

By allowing the market to evolve spontaneously as a common pool, the Americans created rights conflicts, but they also created an entirely new industry and cultivated among U.S. businesses the technical and management skills needed to achieve global leadership in it. Moreover, precisely because the uncontrolled appropriation activity pulled the government and the industry into new kinds of property rights conflicts, American stakeholders, for better or worse, would take the lead in defining the terms of the institutional innovations that would be required to resolve them.

6.1.5 Property Rights Conflicts

An inescapable feature of common pool resources is that as demand intensifies, appropriators are more likely to come into conflict with each other. As this happens, the conflicting parties may begin to articulate property claims and seek to have exclusive ownership rights created or upheld by legal and political institutions. Property rights conflicts over domain names began to achieve public visibility in 1994, fairly soon after the Web's transformation of the *.com*, *.net*, and *.org* domains. The conflicts became widespread in 1995 and 1996.

There were two catalysts of rights conflicts. One was the perceived clash between trademark protection, a preexisting form of property rights in names, and second-level domain name registrations. The other was a conflict over the right to top-level domain name assignments, which were valued because they might bring with them the right to sell registrations to second-level domain names. Both conflicts led inexorably to contests over control of the root, for whoever set policy at the root level would significantly affect events at the lower levels. The rest of the chapter follows the rights conflicts up the domain name hierarchy, starting with second-level domains and moving up to the root level.

^[1]Nysernet formed PSINet, other regionals formed Cerfnet, and UUNet. Later, these three joined with Sprint to form the Commercial Internet eXchange (CIX) in 1991.

^[2]Email, Steve Wolff, director, NSF CISE, to Eric Aupperle, president, Merit Network, May 24, 1991, <<http://www.merit.edu/merit/archive/nsfnet/nsf.agreements/commercial.traffic>>.

^[3]Project Solicitation 93-52, Network Access Point Manager, Routing Arbiter, Regional Network Providers, and Very High Speed Backbone Network Services Provider for NSFNET and the NREN Program.

^[4]NSF also supported a 'routing arbiter' to provide a database and other information needed by the NAPs to exchange traffic in an orderly fashion, as well as some transitional funding for the regional networks.

^[5]Mosaic was the outgrowth of a program written by the Software Development Group at the NCSA called Collage, designed to enable researchers to collaborate over networks. As the project neared completion, programmers at the group got wind of the World Wide Web project and quickly realized that Web compatibility could turn the Collage project into something much broader than a collaboration tool. See <<http://www.webhistory.org/historyday/abstracts.html>>.

^[6]NSFNET backbone statistics are archived at the Georgia Tech Graphics, Visualization and Usability Center, <<http://www.cc.gatech.edu/gvu/stats/NSF/merit.html>>.

^[7]Minutes, October 13, 1994, IAB Meeting, <<ftp://ftp.iab.org/in-notes/IAB/IABmins/IABmins.941013>>.

^[8]It is clear from the materials presented by NSI that a primary culprit in the RS work load is the .COM domain. . . . At present, the management of .COM is paid for by the NSF, and hence increasing demand for .COM registrations will require increasing support from the NSF. The panel recommends that NSI begin charging for .COM domain name registrations, and later charge for name registrations in all domains.' InterNIC Midterm Evaluation and Recommendations: A Panel Report to the National Science Foundation, December 1994, <http://www.networksolutions.com/en_US/legal/internic/midterm/index.html>.

^[9]<http://www.networksolutions.com/en_US/legal/internic/cooperative-agreement/amendment4.html>.

^[10]Global Domain Names Status Report, NetNames, London, March 1997.

^[11]Email, August 17, 1998, from former NSI employee to newlist.

^[12]In July 1993, Brian Reid, who at the time worked for Digital Equipment Corporation, received an email from InterNIC stating, 'We try to register only one name per 'organization.' DEC.COM has been around since day-one. Do you intend to replace DEC.COM with DIGITAL.COM?' cdomreg@internic.net to Brian Reid, July 16, 1993; on file with author.

^[13]According to Kim Hubbard, former director of ARIN, an early employee of Network Solutions, and a worker at the InterNIC from 1991 to 1996, it was Jon Postel who decided that it was a 'waste of time' to attempt to segregate .com, .net, and .org registrations.

^[14]Network Solutions did not threaten to deactivate domain names for nonpayment of the fees until June 1996. A copy of a June 17 news release is archived at <<http://www.iiia.org/lists/newdom/1996q2/0295.html>>.

^[15]The French ccTLD, for example, in 1996 required users to fit into one of eight categories: .asso, .barreau, .cci, .cesi, .dxxx, .gouv, .presse, and .tm.

^[16]Internet Domain Survey, July 1995, <<http://www.isc.org/ds/WWW-9507/distbynum.html>>.

^[17]For U.K. statistics, see <<http://www.nominet.org.uk/news/stats/stats.1996.html>>; for U.S. statistics see <http://www.networksolutions.com/en_US/legal/internic/coop-stats/>.

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6.3 Conflicts over Top-Level Domains

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Amidst the intellectual property battles, the new policy of charging for domain names was turning domain name registration into a profitable enterprise. SAIC had infused its new acquisition with the cash needed to automate its registration operations. Network Solutions' revenues rose to US\$19 million in 1996-small by current standards but triple what it had been the year before. In 1997 annual revenues leaped to US\$45.3 million, and in September of that year an initial public offering of 3.3 million shares on NASDAQ generated a market value of US\$350 million.

Network Solutions' success fueled demand for new top-level domain name assignments. The demand came from business people who wanted in on the bonanza, and, for very different reasons, from the Internet engineering community. But the property rights and public policy problems raised by the creation of new top-level domains proved to be even more difficult to resolve than the fights over second-level domain names. Ultimately, the technical community's organic institutions-the Internet Assigned Numbers Authority (IANA) and the Internet Architecture Board (IAB)-proved to be incapable of responding to the need for new top-level domains. Their informal chain of authority lacked sufficient legitimacy and recognition in the commercial and political world. The Internet engineering community lost control of its name space at this time.

6.3.1 Delegation Conflicts over Country Codes-RFC 1591

The growing significance of the Internet after 1991 began to make the delegation of country code top-level domains contentious. In some countries, different government agencies or organizations within the country competed among themselves for the right to be delegated the country code. IANA sometimes received letters from people purporting to be government authorities requesting a change in the delegation. Some of them did not really have the claimed authority or appropriate qualifications (Klensin 2001). Issues about which nationalities qualified for a country code began to arise.

In an attempt to clarify the basis for making TLD delegations, Postel drafted a more explicit policy, which was released as RFC 1591 in March 1994. This was just before the World Wide Web explosion and only a year and a half before Network Solutions was authorized to charge for domain names. The document enumerated the following criteria for making a delegation:

-

There must be a designated manager for supervising the domain's name space, and the administrative contact must reside in the country.

-

The designated manager is the trustee of the top-level domain for both the nation and the global Internet community.

-

The designated manager must be equitable to all groups in the domain that request domain names.

-

Significantly interested parties in the domain should agree that the designated manager is the appropriate party.

-

The designated manager must do a satisfactory job of operating the DNS service for the domain.

The statement proposed to set up an 'Internet DNS Names Review Board' to resolve disputes about delegations. It also explicitly distanced IANA from the politically contentious problem of deciding what qualified as a country.

RFC 1591 has been called 'one of Jon Postel's masterpieces' by one Internet veteran (Klensin 2001). From an institutional perspective, however, RFC 1591 was more like a symptom of a growing problem: the traditional Internet community's inability to cope with the commercial and political pressures closing in on top-level domain delegations. The strongest and most effective aspect of the policy was its decision to strictly adhere to the ISO-3166-1 list as the basis for ccTLDs. The list—an official standard produced by a UN agency—was a reasonably objective item that shielded IANA from political pressure to modify the list of available top-level domains. RFC 1591 also reflected Postel's wise sense that whenever possible, conflicts or competition within a country should be resolved before a delegation was made rather than thrusting IANA into a position to determine who was 'right.' In general, however, RFC 1591 proved ineffective or arbitrary.

RFC 1591 was an anachronism almost as soon as it was issued. The Web was transforming the Internet into a mass medium, and domain name registration was about to become a lucrative market. Yet Postel still thought of TLD administration as a 'public service,' and to him this meant not just nonprofit supply but service 'carried out at no or minimal cost to the users (Klensin 2001). The policy was based on a 'trustee' concept of delegation but specified the criteria of trusteeship in only the vaguest terms and basically gave one man (Postel) the right to determine who was a 'significantly interested party' and who best qualified as a trustee. Interestingly, RFC 1591 defined ccTLD managers as trustees for *two* distinct communities: the country *and* the 'global Internet community.' Only a year before a cacophony of conflicting claims to names would begin to transform the institutional arrangements of the Internet, Postel offered the aphorism, 'Concerns about 'rights' and 'ownership' of domains are inappropriate. It is appropriate to be concerned about 'responsibilities' and 'service' to the community.' In short, RFC 1591 took the philosophy and informal practices that had worked well when the Internet was the responsibility of a relatively small, noncommercial community of engineers and tried to transmute it into a platform for allocating a globally contested resource. It didn't work.

From 1994 to 1997, following the publication of RFC 1591, the last remaining country code delegations were added to the root at an accelerating pace. The RFC served as a minor restraint on a stampede to occupy valuable territory. Administrative contacts for developing country TLDs often do not reside in the affected country.^[31] Many of the country codes delegated by Postel at this time were in fact to commercial entities. Many tiny countries and dependencies, by virtue of their presence on the ISO-3166 list, could claim a TLD—a valuable right that commercial corporations in developed economies sought unsuccessfully for years. Some of the small territories utilized this windfall as a revenue-generating source, creating a new breed of ccTLD: the quasi-generic country code.^[32] In a few cases, notably Haiti, Postel was dragged into domestic disputes and made arbitrary decisions.^[33] The lofty notions about trusteeship for the nation and the global Internet community were soon replaced by a new rule in practice: 'Follow the expressed wishes of the government of the country with regard to the domain name manager for the country code corresponding to that country.'

The Names Review Board was never established. RFC 1591 failed to provide a solid procedural basis for delegating new generic top-level names. Its whole approach to the trademark problem was to propose to limit the role of the registration authority to providing 'contact information to both parties.' A wise policy, perhaps, but ultimately one that was honored only in the breach, as first Network Solutions and later ICANN directly involved registries in dispute resolution. In short, while RFC 1591 may have been useful as an informal set of guidelines within the Internet community, it did nothing to resolve the growing property rights conflicts taking place at the top level.

6.3.2 *newdom* and the Response to Charging

A rift was growing between Network Solutions and the Internet technical community. The community had reacted uncomfortably to the acquisition of the InterNIC registry by a multibillion-dollar defense contractor in March 1996. Many of its participants did not approve of the commercialization of domain names generally.^[34] The company's dispute resolution policy was unpopular, not so much because of its substance but because it was perceived as a move made without consulting the broader community.^[35] The decision by NSF to allow charging for domains was also widely perceived as something that happened without sufficient consultation.^[36]

The announcement of that decision in September 1995, therefore, precipitated a strong reaction on the email lists frequented by the techies. Only two days after NSF transmitted its letter authorizing charging, Jon Postel sent an email to the Internet Society board: 'I think this introduction of charging by the InterNIC for domain registrations is sufficient cause to take steps to set up a small number of alternate top-level domains managed by other registration centers. I'd like to see some competition between registration services to encourage good service at low prices.'^[37]

Postel's attitude was shared by many others in the technical community. Creating new top-level domains (TLDs) was a way to reassert the authority of 'the community' over Internet administration. A new mailing list/ working group on new top-level domains, *newdom*, was formed on September 15, 1995.

The *newdom* list became the first great battleground of what would become a five-year struggle to authorize new top-level domains. The group's original goal had been to implement competition in domain name registration within a few months, before Network Solutions was actually able to bill anyone. The list members quickly discovered, however, that defining top-level domains, which had been controversial in 1984 when no money was at stake, raised even more complex questions in the new commercialized environment. Among the issues the list confronted were the following:

•

How many new TLDs should be or could be added? If limits must be imposed, how does one decide who gets to administer a new TLD and who doesn't? Will those limits provoke lawsuits?

◦

If there are competing applications for the same TLD, how does one decide which applicant gets it? Will those decisions spark lawsuits?

◦

Should the root server administrator benefit from the addition of new TLDs, for example, by charging a fee, auctioning off the right, or demanding a percentage of revenues?

◦

Are delegations made in perpetuity, or for a fixed term? How can they be retracted?

◦

Can there be intellectual property in a TLD string? Do those rights inhere in the registrant, the registry, or the root administrator?

◦

Do the administrators of a TLD domain 'own' the right to enter registrations under the TLD, or must they share the right to perform registrations with other companies? Do they own the zone files?

◦

Will the addition of new TLDs create additional headaches for trademark owners who have already registered their names in existing domains? If a successful business was established at *www.shop.com*, for example, what happens when *www.shop.web* or *www.shop.inc* becomes available?

Some of the *newdom* participants, notably Perry Metzger, Scott Bradner, John Gilmore, and Terry Poot, opposed the creation of any new top-level domains. They favored instead the development of technical solutions that would make it possible to allow competing companies (what would later be called registrars) to register names under existing top-level domains. Many others, including Simon Higgs and Karl Denninger, favored the rapid creation of new registries like Network Solutions, but with different top-level domain names. Jon Postel supported the latter view. He was not yet convinced that a feasible method of sharing a toplevel domain had been defined. He proposed to go ahead with the authorization of new, exclusive top-level domains while working in parallel to define a feasible shared-registry model that could be implemented later. ^[38]The group followed his lead. ^[39]

The most important product of the *newdom* list was a draft RFC entitled 'New Registries and the Delegation of International Top-Level Domains,' more widely known simply as draft-postel (Postel 1996). Although it became the focal point of international debate on new toplevel domains for the better part of 1996, it remained an Internet-Draft and never attained the status of an official RFC. Draft-postel had two salient features. It proposed a fairly liberal, market-driven, but controlled method of allowing the top-level name space to expand in response to demand. And it proposed to use the authorization of new top-level domains to fund Postel's IANA operation. IANA would become part of the Internet Society, which would provide it a 'legal and financial umbrella.'

In the first year of implementation, draft-postel proposed to charter 50 new top-level registries, each, like Network Solutions, able to offer three new top-level domain names, for a total of 150 new TLDs. After that, ten new registries would be chartered every year; as before, each would have exclusive control of three new top-level names. ^[40]The new registries would be chartered for five-year terms and would enjoy a presumption of renewal if they provided good service. Applicants would pay a US\$1,000 application fee. Successfully chartered registries would pay US\$10,000 and 1 percent of their annual revenues into a fund managed by the Internet Society. ^[41]The funds would be used to provide insurance against legal or operational problems caused by the collapse of a registry and to support the activities of IANA. The fees and revenue percentages, and IANA's right to impose them, were one of the greatest sources of controversy.

To be chartered, new registries would have to meet three criteria: one pertaining to registration services, the second pertaining to operational resources such as Internet connectivity and name server performance, and the third pertaining to financial capability. These criteria were minimal and technically justifiable, and they consciously avoided any attempt to assert regulatory control over most aspects of business or technology. The proposal also specified commonsense criteria and methods for revoking or refusing to renew a charter.

6.3.3 The Top Level as Common Pool?

During the development of draft-postel, a number of the individuals in the United States who had been agitating for new top-level domains established their own 'experimental' registries. In April 1996, Eugene Kashpureff set up the AlterNIC registry and claimed the *.exp*, *.ltd*, *.lnx*, *.med*, *.nic*, and *.xxx* top-level domains as his intellectual property. Kashpureff ran his own root zone name server to support the new domains. Similarly, Karl Denninger, of the Chicago area ISP MCSNet, asserted a claim to the *.biz* domain, and Christopher Ambler, of Image Online Design, staked a claim to *.web*. In effect, a form of appropriation in the top-level name space was taking place in which operators sought to develop property rights through first-use, by establishing a registry providing name service for a selected top-level name. A de facto system of coordination and mutual recognition existed among some of these actors; they recognized each other's claims and pointed to each

other's name servers. Sometime in the late summer of 1996, some of them began to sell registrations under their top-level domains.

Table 6.3 shows a list of top-level domain name applications submitted to IANA. The list was compiled by Postel in December 1996. Many of the proposed strings were predictable. There were six separate applications for *.www*, three applications for *.sex*, applications for *.news*, *.music*, and *.fun*. But some were more problematical. There were applications for *.abc* and *.cbs* by an individual who had no relationship to the American broadcast networks. There was an application for *.euro*. An applicant named Mark had applied for the top-level domain *.mark*, raising the possibility that the 'vanity-tagging of the Internet' that had already ballooned the *.com* zone might move into the top level of the domain name hierarchy.

The alternative top-level domain entrepreneurs had participated in or followed the *newdom* list but had fairly critical and tense relations with the IANA group. They considered IANA to be a closed aristocracy or a maddening bureaucracy. The IANA/IETF crowd viewed many of them as crass mercenaries or 'crazies.' IANA was being forced to deal with a new type of stakeholder. They were not cooperative techies with roots in academic computer science, but impatient, brash, and sometimes entirely money-minded entrepreneurs. Kashpureff, for example, was a self-taught computer whiz and community college dropout who made his first big money computerizing the paperwork for a Seattle tow-truck business (Diamond 1998). Although the final proposal in draft-postel had been adjusted to meet some of their concerns, the relationship was an awkward one.

Nothing demonstrated the awkwardness better than an attempt in July to negotiate the implementation terms of draft-postel. Postel's new toplevel domain scheme had proposed to create an ad hoc committee to receive and evaluate applications for top-level domains. On July 31, 1996, Bill Manning, an Information Sciences Institute (ISI) employee who worked with Postel on IANA functions, met with Chris Ambler, Simon Higgs, and another prospective registry operator to discuss the evaluation criteria. Manning's notes of the meeting indicate that the participants felt that a 'good faith effort' to establish a working registration service was one criterion that should be used. The issue of fees to be paid to IANA by the registries was also discussed. At the end of the meeting, Ambler gave Manning a check from his company for US\$1,000, intended to serve as the application fee specified in the draft.^[42] Later, the envelope was returned to him, unopened.^[43] On August 2, Postel sent a message to the *newdom* mailing list stating, 'The suggestion that the IANA is accepting money to reserve new top-level domains is completely false.'^[44]

Table 6.3: TLD Applications to IANA, 1995-1996

TLD Strings	Method	Time and Date	Requester
<i>.news</i>	Form	14 Sep 1995 00:23:26	Simon Higgs
<i>.www</i>	Form	15 Sep 1995 13:15:36	Chris Cain
<i>.web</i>	Form	15 Sep 1995 16:04:28	Scott Adams
<i>.usa, .earth</i>	Form	16 Sep 1995 04:22:35	John Palmer
<i>.gvt, .npo, .isp, .uni</i>	Form	17 Sep 1995 20:59:54	Scott Ellentuch
<i>.plc</i>	Form	17 Sep 1995 23:46:04	Gordon Dewis
<i>.shop, .mall, .eat, .sex, .hot, .wow, .trash, .pub, .non, .ego, .job, .ask, .aid, .old, .art, .eng, .hosp, .med, .law, .ins, .farm, .car, .air, .util, .srv, .media, .npo, .trade</i>	Mail	19 Sep 1995 08:06:47	Jeff Weisberg
<i>.bsn, .sbs, .ntw, .gvt, .crp, .uni, .msc, .per, .srv, .cmm, .www, .pbc, .egn, .mgf</i>	Mail	19 Sep 1995 14:20:58	Chris Christensen
<i>.ind</i>	Form	20 Sep 1995 09:35:53	Marc Nicholas
<i>.bbs, .isp</i>	Form	22 Sep 1995 09:55:56	Gordon Dewis
<i>.xxx, .nap</i>	Form	22 Sep 1995 18:29	American Information Network
<i>.carib</i>	Form	23 Sep 1995 02:07:13	Carlo Marazzi
<i>.biz</i>	Form	23 Sep 1995 13:45:32	Matthew Grossman
<i>.usa</i>	Form	24 Sep 1995 16:57:46	Scott Ellentuch
<i>.usa</i>	Form	27 Sep 1995 12:51:38	Rick Mount and Chris Phillips
<i>.www</i>	Form	2 Oct 1995 11:41:26	David Kenzik
<i>.biz</i>	Form	5 Oct 1995 14:25:48	Andrew Doane
<i>.coupons, .rebates</i>	Form	5 Dec 1995 13:13	Simon Higgs

TLD Strings	Method	Time and Date	Requester
.web	Form	11 Feb 1996 17:06:50	Mike Lester
.alt	Form	13 Feb 1996 17:50:44	James Howard
.agr	Form	12 Mar 1996 19:21:16	Jonathan Baker
.alt	Form	20 Mar 1996 00:02:34	Gregory Massel
.dot	Mail	26 Mar 1996 20:22:22	Christian Nielsen
.eur, .euro	Mail	13 May 1996 14:32:20	Bernard de Rubinat
.inc	Mail	26 Jun 1996 14:30:10	Jace Greenman
.info, .veg	Form	26 Jun 1996 21:29:33	Das Devaraj
.alt, .live, .post	Form	27 Jun 1996 15:41:29	Michael Dillon
.biz	Form	1 Jul 1996 09:47:41	Karl Denninger
.web, .auto, .www, .car	Form	1 Jul 1996 18:47:	Chris Ambler
.corp, .music		3 Jul 1996 21:00	

(118 other TLDs) applications listed until 26 Nov 1996

^[31]An English company from Manchester, Fast-net Developments Ltd., applied to IANA for the top-level domain for Libya, .ly. Fast-net Development's owner, Kalil Elwiheishi, was listed as the administrative contact for the .ly domain with an address in Tripoli, which appears to fulfill IANA's residency requirement. The owner's real residence was England, but IANA lacked the capacity to monitor such things. A British company, NetNames, acted as collector of registration fees for .ly, which it split with the administrative contact. Such arrangements were not at all uncommon with other developing country ccTLDs.

^[32]The small nation of Niue (.nu), for example, allows its ccTLD to be administered and marketed by a 'nonprofit' foundation. Both .nu and the ccTLD for the Cocos and Keeling islands (.cc) are marketed commercially and globally as an alternative to generic TLDs. In a few cases, a happy coincidence allows the ccTLD to function as a kind of generic TLD. The ISO code for Tuvalu, for example, is .tv; for Moldova, the code is .md. .tv was subdelegated to Idealab, Inc. and marketed commercially.

^[33]For an account of the Haiti (.ht) delegation crisis, see John S. Quarterman, *Matrix News* 7 (December 1997).

^[34]It was not unusual to see on various email lists disapproval of the idea that 'everyone wants their own domain' and the opinion that DNS was 'never designed' to provide that. See, for example, Joe Provo: 'The problem is-and always has been-inappropriate registering. The 'joes-bar-and-grill.com'-style registering is wildly inappropriate and was (mostly) avoided by ordinary pressures until the 'anything for a buck' providers entered the game.' Email to *newdom* list, October 25, 1995, <<http://www.iiia.org/lists/newdom/>>.

^[35]See IAB minutes, August 1995, <<ftp://ftp.iab.org/in-notes/IAB/IABmins/IABmins.950808>>.

^[36]'No one has really objected to paying reasonable fees for registration. EVERYONE (almost) has objected to paying fees set arbitrarily by a group which contains and considers little or no input from the community in the process and is not restricted to any public comment period or public regulation regarding future fee levels.' Owen DeLong, email to *newdom* list, September 20, 1995, <<http://www.iiia.org/lists/newdom/1995q3/0323.html>>. However, the Internet Architecture Board minutes for October 13, 1994, note, 'There was an NSF-sponsored meeting on this issue [charging], which concluded that a charging model should be developed for registration services (on a yearly maintenance basis).

^[37]Email, Postel to isoc-trustees@linus.isoc.org, September 15, 1995, <<http://www.wia.org/pub/postel-iana-draft13.htm>>.

^[38]'So I would suggest we proceed on two fronts in parallel: (1) to look at ways a single TLD could be shared between two or more registries without a single central mechanism, and (2) to look at the procedures we would set up to establish new registries and new TLDs without such sharing. If we find a good way to support the sharing we will update the procedures to include it.' Email, Postel to *newdom*, October 19, 1995, <<http://www.iiia.org/lists/newdom/1995q4/0009.html>>.

^[39]An IETF Working Group on shared TLDs was formed and met at the Dallas meeting in December 1995, producing a draft.

^[40]The \$10,000 fee varied across different drafts, starting at \$100,000 and going down to \$2,000 in one iteration.

^[41]The significance of this exchange is disputed. Ambler maintains that Manning watched him write the check and understood that it and the accompanying paperwork constituted a formal application for permission from IANA to run an experimental registry. Postel and Manning strongly disputed this statement, contending that the envelope was presented to Manning in a manila folder along with other papers from Ambler and that he did not discover it until after Ambler left the meeting.

^[42]The fact that the envelope was unopened tends to support Ambler's version of the story-how could the IANA staff have known that it contained money if they never opened it?

^[43]From Thom Stark, 'The New Domain Name Game,' 1997, <<http://www.starkrealities.com/iahc.html>>.

^[44]IAB minutes, October 1994, <<ftp://ftp.iab.org/in-notes/IAB/IABmins/IABmins.941013>>.

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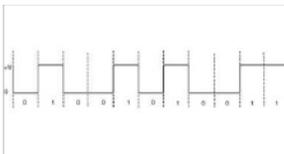
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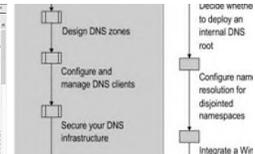
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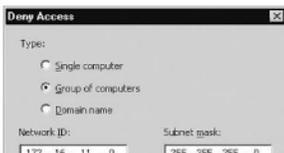
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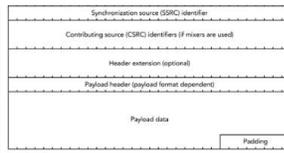
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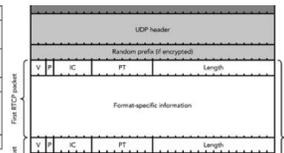
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6.4 Conflicts over the Root

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In the DNS hierarchy, the power to add new top-level domains or to assign existing top-level names to specific applicants is held by whoever defines the root zone file. But where did the formal authority for this lie? Who owned the name and address spaces? More than a year before the big push to create new top-level domains, the privatization, commercialization, and internationalization of the Internet had prompted discussions of this question in the technical community and the U.S. government. Postel himself, in an October 1994 report on the problems caused by the rapid growth of domain name registration, admitted that the bigger problem underlying it all was that 'it is unclear who actually controls the name space and what is fair procedure.'^[45] The commercialization of domain names made this question more difficult to answer, by raising the stakes and bringing new interest groups into the dialogue.

Between 1994 and 1996 three distinct parties emerged to assert claims on the root: the Internet Society (ISOC), the U.S. government, and alternative root servers.

6.4.1 The Internet Society Claims the Root

As noted in chapter 5, the Internet engineering community had created its own authority structure composed of the Internet Engineering Task Force (IETF), IANA, and the Internet Architecture Board. Superimposed over this structure, rather loosely and tenuously at this point, was the Internet Society; its purpose was to provide a corporate identity, legal protection, and financial support to the other components when needed. The Internet Architecture Board already had been fully incorporated into the Internet Society. The IETF rank and file, however, did not yet identify with ISOC. The relationship between them was a 'cantankerous' one, with doubts still being openly voiced about what ISOC was and whether it was of any benefit to the community.^[46]

Just before the domain name wars erupted, the IAB and the Internet Society were attempting to transfer formal authority over the root into ISOC's fledgling organizational structure. In July 1994, Postel prepared a draft charter for IANA, proposing that the Internet Society's board of trustees would delegate to the IAB the right to select the IANA. Although the model for 'chartering' IANA was IAB's movement under ISOC's umbrella in 1992, IANA's situation was more complicated. IANA was not an informally constituted committee but a set of functions performed pursuant to government contracts with ISI. The name and address spaces could be considered valuable resources. In effect, Postel was proposing that these functions and resources be privatized. A final draft of the proposal, circulated in February 1995, encountered resistance from parties in the Federal Networking Council (see section 6.4.2). The controversies over charging and new top-level domains intervened before those issues could be resolved.

Draft-postel, drawn up only a few months later, was shaped to a significant degree by the desire to operationalize that new role. In June 1996, at its annual meeting in Montreal, the Internet Society's board of trustees voted in principle to support the proposal. The Internet Society was now formally backing a plan to assign commercially valuable property rights in top-level domains to competing registries, collect fees from the licensees, and in the process establish itself as the manager of the DNS root-all without any formal legal or governmental authorization.

6.4.2 The U.S. Government Claim

The Internet Society's claims did not go uncontested. As soon as the Internet Society began to circulate its IANA charter early in 1995, Robert Aiken, the U.S. Energy Department's representative on the Federal Networking Council (FNC), began to ask uncomfortable questions. In a March 1995 email message that went out to the IETF, the Federal Networking Council, the Coordinating Committee on Intercontinental Research Networks, and the ISOC board, he asked, 'Is ISOC claiming that it has jurisdiction and overall responsibility for the top-level address and name space? If yes, how did ISOC obtain this responsibility; if no, then who does own it?'^[50]

In his reply to Aiken, Vint Cerf argued that the Internet was becoming increasingly international and public in character and that management of the name and address space needed to adjust: '[I]t seems to me as if it is possible to make some deliberate agreements now among the interested parties (among which I would include the NICs, the IANA, the various U.S. Gov't research agencies, and ISOC) as to how to proceed in the future. My bias is to try to treat all of this as a global matter and to settle the responsibility on the Internet Society as a nongovernmental agent serving the community.'^[51] No formal decision seems to have emerged from these exchanges. They did, however, prompt the National Science Foundation to sponsor a conference on the 'coordination, privatization, and internationalization' of the Internet in November 1995.^[52] The event brought together many of the key participants in Internet administration.

At that conference, Mike St. Johns, the DARPA representative on the Federal Networking Council, set out a description of authority over the name and number spaces that stood in stark contrast to the one being advanced by the Internet Society. The Defense Department, he asserted, owned the name and address spaces. It had delegated 'ownership' of IPv4 addresses to the FNC 'with the understanding that DOD would continue to have first call on the number space if they needed it, but that block and other delegations would be done by the InterNIC in consultation with the IANA' and other agencies. Policy ownership of the DNS root, St. Johns asserted, was transferred to the FNC at roughly the same time as the number space was delegated. St. Johns believed that policy control of the *.com*, *.org*, and *.net* domains remained with the FNC. According to St. Johns, the InterNIC and the IANA were funded by NSF and ARPA, respectively, and therefore those federal agencies 'maintain both fiduciary and program responsibilities' for them.^[53] Other comments reveal that both Aiken and St. Johns were critical of the Internet Society and felt that it lacked the 'international standing' to take over authority for the root.

The non-U.S. participants were not pleased. Reacting from a European perspective, Daniel Karrenberg of R eseaux IP Europ ens (RIPE) asserted that 'the IANA, not the InterNIC' owns the address space and urged everyone to 'take an international perspective.'^[54] David Conrad, representing the newly created regional address registry for the Asia-Pacific region, voiced similar sentiments. Even within the United States, most members of the technical community, particularly Cerf and Postel, were deeply uncomfortable with assertions of national authority over Internet administration.

6.4.3 The Broadening Dialogue

The November 20, 1995, event proved to be the first of a series of conferences and workshops on Internet governance that continued throughout the year 1996. The conferences expanded the dialogue beyond the Internet engineering community to include representatives of trademark holders, legal scholars, and international organizations such as the International Telecommunication Union (ITU), the Organization for Economic Cooperation and Development (OECD), and the World Intellectual Property Organization (WIPO). This included a February 1996 conference on Internet administrative infrastructure sponsored by the Internet Society and the Commercial Internet eXchange (CIX), a June 1996 meeting sponsored by OECD in Dublin, and a September 1996 conference on 'Coordination and Administration of the Internet' sponsored by the Harvard Information Infrastructure Project, the National Science Foundation, CIX, and the Internet Society.

As soon as draft-postel was put forward as a live option, the proposal encountered vocal opposition from a variety of interest groups. Attacks were made not only on the substantive policy it defined but also on the legitimacy of IANA/ISOC to set policy and to collect funds from the authorization of new top-level domains.

One of the most vehement critics of draft-postel was Robert Shaw, an ITU staff member. Shaw charged that IANA lacked the authority to 'tax the root'^[55] and ridiculed draft-postel's informal arrangements: 'According to Postel's draft, these potentially multimillion-dollar-generating registries will be awarded by an 'ad hoc working group' [who are] for the most part engineers [with] no real legal or policy framework behind them' (Shaw 1997). A deeper agenda underlay the ITU's interest in domain name issues. As the intergovernmental organization that had presided for decades over a regime of state-owned telephone monopolies (Cowhey 1990), the ITU was uncertain of its role and status in a new, liberalized order. With the Internet on the rise, private-sector-led standards forums proliferating, and the days of traditional, circuit-switched telephone service seemingly numbered, the ITU needed to assert a role for itself in Internet governance or standards setting. The governance debates presented it with an opportunity to establish itself as an actor in that arena.

Trademark holders also objected to draft-postel's expansion of the name space, although their role was not as prominent at this juncture as it would be later. They feared that it would increase the scope for name speculation and trademark dilution, and that mark holders would feel obliged to register their names in all new domains (Maher 1996). At this time David Maher, co-chair of a new Committee on the Internet formed by the International Trademark Association, emerged as one of the spokesmen for the trademark community on domain name issues. Maher had served as trademark counsel to McDonald's Corporation and in that capacity had facilitated the highly publicized transfer of *mcdonalds.com* from the journalist Joshua Quittner to the company.

Draft-postel even failed to win the support of the prospective domain name registration businesses, despite its plan to authorize hundreds of new registries. By late October 1996, the alternative registry operators had become completely disenchanted with the IANA-led process and had begun to voice explicit attacks on Postel and the process that had produced the draft. ^[56]What had begun as complaints about the fees required to enter the market, and IANA's and the Internet Society's authority to assess them, evolved into a deeper challenge to the whole IANA model of DNS administration, with a single, authoritative root zone file set by a central authority. Leading critics such as Karl Denninger argued that rights to top-level domains should be established on a first-use basis by registry operators and that the root servers supporting those registries could be coordinated on a voluntary basis: 'The problem [IANA] people have with this scheme is that it undermines the control structure that some people just don't want to give up. Specifically, if you have a dozen TLD consortia, defined by the root name server 'sets,' then NOBODY-not IANA-not ALTERNIC- not MCSNet-not ITU-not ANYONE-can dictate to people what the fees or market forces are that cause TLDs to exist.' ^[57]

In a widely read article, a columnist in *CommunicationsWeek* with ties to the alternative root operators attacked the 'Net governance cartel' and dismissed draft-postel as an 'Amway-style multilevel marketing scheme whereby IANA would essentially franchise TLDs, collecting a piece of the action from downstream distributors while maintaining authoritative control' (Frezza 1996). The *newdom* list degenerated into a shouting match between supporters and detractors of Postel/IANA. Paul Vixie, writer of the BIND code and a member of the Internet old guard, accused the alternative registries of an attempted coup: 'Rather than work within the process (which would at this point mean attending some ISOC open board meetings) they are attempting a coup. I think IANA's done a fine job for a decade and that it is insulting, to say the least, for folks to try a power grab when the IANA's open/public change process is just about complete. . . . The people who want to pull [the DNS root] away from IANA are not in this for your revolution, man, they're in it for the money.' ^[58]

By the fall of 1996 it was clear that Postel and the Internet Society lacked the legitimacy and support needed to implement their plan. But no other claimant with wider support emerged. Aware of the strong resistance from international networking entities to a U.S. government claim, the federal government took no action to advance or renege on St. Johns' statements. The Federal Networking Council seemed paralyzed; its advisory committee repeatedly sent it strongly worded messages urging it to transfer policy authority over top-level domain administration from the National Science Foundation to 'some appropriate agency,' but nothing happened. The alternative root server confederations could not get Network Solutions or Postel to add their new top-level domains into the root, and they lacked the broad support required to provoke a coordinated migration to a new root server system.

[1] Draft-postel is unfortunately vague about how it would handle conflicting applications for the same character strings; rather than specifying an auction procedure it implies that IANA would use its own discretion (Postel 1996, 19).

^[45]Interview with Scott Bradner, July 19, 2000. Bradner blames Rutkowski for many of the tensions, claiming that he acted as if the IETF was a 'wholly owned subsidiary of the Internet Society' during his tenure as director.

^[46]IAB minutes, December 1994, <<ftp://ftp.iab.org/in-notes/IAB/IABmins/IABmins.941209>>.

^[50]Email, Cerf to Aiken, March 18, 1995, <<http://www.wia.org/pub/postelianadraft9.htm>>.

^[51]National Science Foundation and Harvard Information Infrastructure Project, 'Internet Names, Numbers, and Beyond: Issues in the Coordination, Privatization, and Internationalization of the Internet,' November 20, 1995, <<http://www.ksg.harvard.edu/iip/GIIconf/nsfmin1.html>>.

^[52]M. St. Johns, 'FNC's Role in the DNS Issue,' Internet Numbering Issues, Kennedy School at Annenberg Program Offices, Washington, D.C., November 20, 1995.

^[53]Minutes of the NSF/Harvard conference, <<http://www.ksg.harvard.edu/iip/GIIconf/nsfmin1.html>>.

^[54]G. Lawton, 'New Top-Level Domains Promise Descriptive Names,' *Sun-World Online*, September 1996.

^[55]IANA's critics charged that it had moved forward with implementation of draft-postel without obtaining IETF approval of it as an RFC and also that it proposed to create an ad hoc working group appointed by Postel rather than an open, IETF working group.

^[56]Karl Denninger, *newdom* post, October 28, 1996.

^[57]Email, Vixie to *newdom*, October 28, 1996.

^[58]The FNCAC reiterates and underscores the urgency of transferring responsibility for supporting U.S. commercial interests in iTLD administration from the NSF to an appropriate agency.' Draft Minutes of the Federal Networking Council Advisory Committee Meeting, October 1996, <http://www.itrd.gov/fnc/FNCAC_10_96_minutes.html>. According to Mike Roberts of Educom, 'The motion we passed expressed the strong desire that the FNC work hard NOW to develop a sound future foundation for the domain name system when the NSI agreement ends in less than 18 months, and further, that an 'appropriate entity' be identified to hold responsibility for those parts of the DNS that are found to require permanent stewardship, i.e., not to be handed over for dissection by the greedy private sector types that lust after the alleged NSI monopoly profits.' Mike Roberts to IETF list, November 10, 1996.

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7.1 IAHC and the gTLD-MoU

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In October 1996 the Internet Society (ISOC) seems to have recognized that if it were to succeed in its mission to assert control of the root, it would have to break new institutional ground. Drawing on the contacts formed during the ongoing debates and conferences, the Internet Society put together what it called a 'blue ribbon international panel' to develop and implement a blueprint for a global governance structure for the domain name system.^[2]The 11-member group (see table 7.1) was named the International Ad Hoc Committee (IAHC).

Table 7.1: The Composition of the IAHC

Name	Affiliation
Don Heath, Chair	Internet Society
Sally Abel	International Trademark Association
Albert Tramosch	World Intellectual Property Association
David Maher	Intellectual property attorney (selected by ISOC)
Jun Murai	Keio University, Japan, WIDE Project (selected by IAB)
Geoff Huston	Telstra, Australian education and research Internet (selected by IAB)
Hank Nussbacher	IBM Israel (selected by ISOC)
Robert Shaw	International Telecommunication Union
Perry Metzger	Internet Engineering Task Force (selected by IANA)
David Crocker	Internet Engineering Task Force (selected by IANA)
George Strawn	National Science Foundation (selected by FNC)

The IAHC initiative reflected the continuing desire of the Internet Architecture Board (IAB), Postel, and the Internet Society to formalize their now-contested authority over the root and introduce a competitive alternative to Network Solutions. It included two representatives of the Internet Architecture Board, two members appointed by IANA (i.e., by Postel), and two appointed by the Internet Society. But the committee considerably expanded the definition of the relevant community. The IAHC included two representatives of trademark holders, one appointed by the International Trademark Association (INTA) and another by the World Intellectual Property Organization (WIPO). The International Telecommunication Union (ITU) was given one representative, as was the Federal Networking Council (FNC). According to the FNC minutes, the FNC sought membership on the advisory committee 'in recognition of the government's historic stewardship role in this sector' (Simon 1998).

The IAHC was chaired by Don Heath, the Internet Society's new chief executive officer. Heath, a Cerf protégé, came to ISOC via MCI Telecommunications in May 1996 and was highly enthusiastic about forging a new, expanded role for ISOC.

^[3]But it was Internet Society president Lawrence Landweber who acted as the catalyst of the ambitious plans. Landweber

insisted that the IAHC include representatives from outside the technical community and that invitations be sent to organizations acting as formal representatives rather than as individuals. He also urged Heath to chair the IAHC on behalf of the Internet Society. ^[4]

In political terms, the committee represented a coalition between the technical community's governing hierarchy (ISOC/IAB/IANA) and other political forces that had contested the ISOC claim on the root in the previous round: trademark owners, the ITU, and the FNC. All were incorporated into the planning process and (FNC excepted) would later be given permanent roles in the proposed governance regime. The political coalition was also notable for whom it excluded. Network Solutions was not invited to be a part of the group. Neither were any representatives of the alternative registries. There was no representative of commercial Internet service providers. ^[5]

Even though its membership was dominated by the technical community's governing hierarchy, the IAHC's procedures broke sharply with IETF procedures and norms. The *newdom* process had been based, roughly, on the procedures set out in RFC 1591. That process was simply ended and its results discarded. Participation in the IAHC was not open, meetings were closed, and no official minutes were kept of the deliberations. An aggressive schedule was imposed, with extra urgency added by the circulation of Vixie's threat only a few days after the group's formation. The committee's charter was released on November 11, 1996, and public comments were solicited via email. Only three months later, a final report laid out a new system of Internet governance (IAHC 1997).

The IAHC completely jettisoned Postel's series of drafts and the claims of the alternative registries. Instead, the final report started with the principle that 'the Internet top-level domain (TLD) name space is a public resource and is subject to the public trust.' That language had been promoted by the ITU's Shaw and reflected concepts never before used in the Internet arena but well known in the context of state-owned or stateregulated post, telephone, and telegraph companies. The language attempted to situate the Internet's name and number resources within the normative principles used by the ITU to administer regulated public telecommunication services, numbering resources, radio spectrum, and satellite slots (Rutkowski 1997).

The IAHC report also diverged sharply from draft-postel by proposing shared rather than exclusive top-level domains. It conceived of the registry database as a natural monopoly and sought to separate the 'wholesale' operation of the monopoly registry database from the 'retail' function of registering names for customers, billing them, and maintaining contact information. The former function was called the registry and the latter the registrar. Under the IAHC plan, a global monopoly registry would be administered on a nonprofit basis. The registry would be co-owned by multiple, competing registrars, who would all share access to the same top-level domains. The number of registrars was artificially limited to 28 companies in order to ensure that the initial group would be a manageable size for developing technical and operational details. The 28 companies would be selected by lottery, with four coming from each of seven global regions. In short, the plan created a cartel, with entry into it governed by norms of geographical equity. This was a typical outcome for an international, intergovernmental organization, but highly atypical of the Internet.

Another dramatic change was that the new system proposed by IAHC linked trademark protection procedures directly to the administration of the DNS. This important but controversial innovation was meant to eliminate the trademark owners' objections to new TLDs by giving them extraordinary power over domain name registrations. Domain names would not be operational until after a 60-day waiting period, during which they would be subject to review by 'administrative challenge panels' run by WIPO. Neither the law nor the legal principles WIPO would use to resolve disputes were specified. IAHC also proposed to exclude from the domain name space all names that corresponded to or resembled 'famous' trademarks. Finally, the proposal imposed an artificial limit on the number of top-level domains. Whereas Postel had originally thought in terms of hundreds of new descriptive top-level domains and annual additions of more, IAHC proposed to add only seven. ^[6] The final report did not make any commitments to add more. This, too, was a concession to the trademark interests. The smaller the name space, the easier their policing problem. Thus, the IAHC expanded the name space slightly but treated it as a regulated cartel.

The IAHC also established a corporate structure that straddled the boundary between the public and private sectors. The overarching framework of the governance structure was a document known as the Generic Top-Level Domain Memorandum of Understanding (gTLD-MoU). The preamble of the gTLD-MoU claimed that the agreement was made in the name of 'the Internet community,' an attempt by the drafters to recall the small-scale, communitarian, consensus-based regime of the ARPANET and the early IETF.

In the proposed plan, registrars would be incorporated in Geneva, Switzerland, as a nonprofit Council of Registrars (CORE). To join CORE, registrars had to pay a US\$20,000 entry fee and US\$2,000 per month, plus an anticipated but as yet unspecified fee to the registry for each domain name registration. The top governance authority was a committee designated as the Policy Oversight Committee (POC). POC's membership would mirror the composition of the IAHC: two members were to be appointed to it by the Internet Society, the Internet Architecture Board, IANA, and CORE; one member each was to be appointed by ITU, INTA, and WIPO. In formulating policy the POC would issue requests for comments just as a regulatory commission might. There was also a Policy Advisory Board (PAB), a consultative body that any signatory to the gTLD-MoU could join. For the Internet technical hierarchy, the structure was intended to provide a vehicle for taking possession of the Network Solutions registry after the expiration of the Cooperative Agreement in April 1998. Network Solutions would be encouraged to participate in CORE as a registrar but would no longer have any control over the *.com*, *.net*, and *.org* registry (Simon 1998). ITU Secretary-General Dr. Pekka Tarjanne hailed the MoU as an embodiment of a new form of international cooperation he called 'voluntary multilateralism.' ^[7] The ITU volunteered to serve as the official

repository of the MoU and took on the tasks of circulating it to public and private sector entities involved in telecommunication and information, inviting them to sign it. It also offered to 'facilitate further co-operation in the implementation of this MoU.'

The gTLD-MoU was signed by Heath and Postel on March 1, 1997. The Internet Society and ITU then organized an official signing ceremony in Geneva at the end of April in an attempt to assume all of the trappings of an international treaty agreement. Members of the IAHC conducted an international series of promotional meetings and press releases to win acceptance of the proposal. Yet the Internet Society and IANA still had no more formal legal authority over the root than they had had in mid-1996.

^[2]News Release, ISOC, Washington, D.C., October 22, 1996, 'Blue Ribbon International Panel to Examine Enhancements to Internet Domain Name System.'

^[3]Interview with Don Heath, June 19, 2000; interview with David Conrad, August 23, 2000.

^[4]Interview with Scott Bradner, July 19, 2000.

^[5]Heath later stated that he had wanted to add a CIX representative to the group (Simon 1998).

^[6]The seven proposed gTLDs were .web, .info, .nom, .firm, .rec, .arts, .store.

^[7]Pekka Tarjanne, 'Internet Governance: Toward Voluntary Multilateralism,' Keynote address, Meeting of Signatories and Potential Signatories of the Generic Top-Level Domain Memorandum of Understanding (gTLD-MoU), ITU, Geneva, April 29-May 1, 1997.

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7.2 Political Reaction to the gTLD-MoU

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The gTLD-MoU was a turning point in the evolution of Internet governance. Control of the root ceased to be a subject of discourse in conferences, mailing lists, and memos, and became the object of an outright power struggle played out in an international arena. The policy agendas of the actors, both pro and con, became more sharply defined; where there were conflicts of interest, lines were drawn and factions formed. Contention among these factions then drew into the fray governmental actors with higher levels of policymaking authority.

'The MoUvement,' as its proponents came to call the gTLD-MoU, marked a sharp break with the governance arrangements of the academic Internet—the Internet of DARPA, the IETF, and the National Science Foundation. This was true for several reasons. The initiative formally involved actors and organizations new to Internet administration, such as the intellectual property interests and international organizations. But the technical community itself was altered in important ways. Established IETF procedures had been abandoned. The technical community's leadership—IAB, IANA, and ISOC—had thrust themselves directly into a highly politicized arena, moving away from their past focus on technical standards setting and embracing a new role as policymakers and regulators. The political, personal, and economic alliances that went into the complicated MoU compromised their neutrality, making them into partisan defenders of a particular view of the domain name registration industry. The close ties between the Internet Society and CORE, the consortium of commercial registrars that would financially support the new governance arrangement and replace Network Solutions as the operational home of the root, set ISOC and its allies on a collision course with Network Solutions. The MoUvement's alliance with intergovernmental organizations and its insistence on its right to assume control of the root on its own initiative set it on a collision course with the U.S. government.

By asserting such a bold and unequivocal claim to the root and forming an international coalition to back it up, the IAHC advanced and polarized the governance debate. Other key actors were forced to clarify their positions, put forward their own claims, and seek support for them.

7.2.1 Network Solutions

Network Solutions was the obvious target of the gTLD-MoU. Publicly, Network Solutions reacted to the draft IAHC proposal in a cautious, noncommittal way, stressing its willingness to work with the committee to achieve consensus.^[6] Similarly, MoUvement spokespeople publicly encouraged NSI to sign on as a registrar and publicized their expectation that it eventually would. But no one was fooled. The gTLD-MoU was fundamentally inimical to Network Solutions' economic interests. As events progressed, the company began to use its lobbying muscle within the United States to undermine and defeat the agreement.

Early in 1997, Network Solutions was preparing for an initial public offering of stock that would bring in hundreds of millions of dollars. Its increasingly profitable control of the .com domain was the engine of its stock market value. The prospect of losing control of the .com registry to a Geneva-based corporation run by avowed enemies and of competing on price with dozens of new registrars in the .com space could not have been an attractive one. Network Solutions' preferred outcome was a permanent property right in the .com, .net and .org top-level domains, with competition taking the form of new registries with exclusive control of new toplevel names, as proposed in draft-postel. Thus, a Network Solutions spokesman told the press in April 1997, 'It is not our intention to share .com or the other [top-level domains] we register. Those would obviously [be] assets that we've developed . . . much as Microsoft wouldn't share DOS [disk operating system].'^[9] In its

initial public offering documents, Network Solutions repeatedly referred to .com as its 'brand' and also asserted property rights over 'a database of information relating to customers in its registration business.'^[10]

Network Solutions at this point came to explicitly support the claim of the U.S. government to authoritative control over the root. NSI was *persona non grata* within the ISOC-dominated technical community. It was also perceived with hostility by foreign governments and businesses, as a symbol of U.S. dominance of the Internet and the cause of the domain name turmoil. In contrast, the company was well positioned in Washington D.C. Backed by the lobbying and financial resources of its parent company, SAIC, and as a longstanding government contractor, it found a U.S.-centered institutional framework more predictable and more amenable to its interests.

7.2.2 The Alternative Registries

The (mostly North American) entrepreneurs who had been positioning themselves to occupy top-level domains under the framework created by draft-postel were outraged by the results of the IAHC. Their business model had been explicitly precluded by the proposed regime. Adding injury to insult, the IAHC proposed to occupy two of the top-level domain names staked out by entrepreneurs (.web and .arts). The alternative registries questioned the fairness and openness of the IAHC's procedures as well as its substantive policy decisions.^[11] Their previous attacks on the legitimacy of IANA and the process that had produced draft-postel notwithstanding, they characterized the IAHC as an illegitimate power grab. One alternative registry tried to fight the MoU with litigation. In February 1997, Chris Ambler, prospective proprietor of the .web top-level domain, sued IANA in California for violating his prior-use and intellectual property claims in .web. The complaint was withdrawn without prejudice before a final ruling could be issued, but the judge appeared to be unsympathetic to his case.^[12]

In March 1997 a group of six small Internet service providers and three other businesses met in Atlanta in an attempt to organize to revive the fortunes of the alternative root movement. Calling themselves Enhanced Domain Name Service (eDNS), they attempted to set up an alternative root server network that would support many new TLDs as well as the established ones.

Opposition to the gTLD-MoU began to bring some members of the *alt.root* community into a tactical alliance with Network Solutions at this point. Both interests were proposing a similar economic model for the toplevel domain name registries, and both believed that resolving the policy issues within the legal and institutional framework of the United States was more likely to produce results to their liking.

7.2.3 American Civil Society Groups

By now the domain name wars were reaching groups and interests outside the immediate purview of Internet infrastructure. The broad societal reaction was mixed, with most actors viewing the gTLD-MoU as unrepresentative and preemptive even though they supported competition and some kind of institutional change.

The gTLD-MoU aroused the opposition of U.S.-based civil liberties organizations concerned about their lack of representation and the power that the proposals gave to trademark interests and international organizations. Free-speech advocates, already mobilized by abuses of Network Solutions' dispute resolution policy, now believed that even more sweeping rights were being given to intellectual property holders. Kathy Kleiman, the general counsel for the Domain Names Rights Coalition, claimed that 'the committee has . . . no representation of small business, individuals, or attorneys who support limits on trademark law. The draft favors large trademark owners who can stop others from using even common names on the Internet. The underlying premise is that a domain name is a trademark, and that premise is fundamentally flawed.'^[13] Other public interest organizations, such as Computer Professionals for Social Responsibility, accused the IAHC process of being 'closed, rushed, and unbalanced' and asked for more time for input from consumers and the public.^[14] While these civil society groups were usually critical of Network Solutions and looked forward to competition in the domain name industry, they did not see the gTLD-MoU as an acceptable solution. Being based in the United States, they, too, tended to support resolving the controversies within a U.S.-based institutional framework, often invoking the First Amendment and other rights derived from the U.S. Constitution.

7.2.4 European Commission

Reflecting the lower level of Internet penetration in Europe at that time, European governments and civil society groups were mostly unaware of the emerging governance wars, except for policy specialists and organizations directly involved in domain name registration and internetworking. The European Union was monitoring domain name issues through its Directorate General 13, the branch in charge of telecommunication policy. Following the release of the gTLD-MoU proposal, the DG-13 official Christopher Wilkinson wrote to the Internet Society's Don Heath on January 17, 1997, expressing dissatisfaction with the lack of European participation and the inadequate amount of time provided for consultation. Wilkinson then convened a meeting of European Internet community members.^[15] The meeting was attended by representatives of nine top-level domain administrators of member states, Daniel Karrenberg of RIPENCC, and a few commercial Internet service providers. The attendees reached a consensus that they should not sign the gTLD-MoU.

Drawing on the results of this meeting, the European Commission DG-13 sent comments to the U.S. State Department and other federal agencies expressing dissatisfaction with the IAHC proposal.^[16] The commission called for 'further public debate' and direct European participation. Although specific criticisms were made of the dominance of English words in the

new top-level names, the selection of registrars by lottery, and issues related to the sharing of top-level domains, the main underlying concern seems to have been that the process was moving too fast and was driven primarily by U.S.-based organizations and interests.

7.2.5 Business Community

Reaction in the international business community was not uniform. Because of the leading role of the ITU, the gTLD-MoU attracted significant support from telephone companies outside the United States. Eventually, France Telecom, Deutsche Telekom, Telecom Italia, Sweden's Telia AB, Japan's KDD, Bell Canada, and Australia's Telstra became signatories. MCI was an early supporter because of the influence of Vint Cerf within that organization; moreover, MCI used its leverage as a major purchaser of Digital Equipment Corporation products to get Digital to sign, too. Indeed, it was the participation of the ITU and the support of old-line telephone companies that unnerved many of the gTLD-MoU's opponents; it appeared as if the Internet were being taken over by the old guard. Another significant source of business support for the plan, however, came from small Internet service providers (ISPs) and prospective domain name registration firms in Europe and Asia, which saw a chance to make inroads into a business dominated by U.S. companies. Companies like Melbourne IT, an Australian ISP, and NetNames, an international domain name consultancy, joined forces with the MoUvement early on.

On the other hand, major multinationals such as IBM, British Telecom, Bell Atlantic, and AT&T opposed the MoU or refused to lend their support. These companies had little or no interest in the business opportunities presented by an expanded name space. They were primarily concerned about the effect of new top-level domains on trademark protection. In later comments, for example, AT&T criticized the gTLD-MoU proposal as being insufficiently protective of trademarks in the domain name space, and the proposed governance structure as having 'insufficient representation' of trademark holders.^[17]

^[18]Network Solutions' Preliminary Response to the IAHC's Draft Specifications for the Administration and Management of gTLDs, January 17, 1997.

^[19]Cited in *Wired News*, April 24, 1997, <<http://www.wired.com/news/politics/>>.

^[10]<<ftp://www.sec.gov/edgar/data/1030341/0000950133-97-002418.txt>>.

^[11]Jay Fenello, the would-be proprietor of a .per top-level domain for personal names, criticized 'the chaos the entire IAHC process has created in the Internet community. Their arrogance about their dominion over the root, and their claim to rightful ownership of such valuable properties like .com and .web have created the conflicts we are now experiencing. A fundamental question is why the IANA, a U.S. government funded contractor, should be allowed to 'give' seven new gTLDs to its self-selected representatives (especially when it negotiates behind closed doors, sets up a Swiss-based cartel, ignores prior Internet precedents, and is generally regarded as an inappropriate power grab). Why should the IANA be allowed to **exclude** already operational [alternative] TLDs and registries?' <http://www.ntia.doc.gov/ntiahome/domainname/130dftmail/02_13_98.htm>.

^[12]*Imagine Online Design v. IANA*, Superior and Municipal Court of the State of California, for the County of San Luis Obispo, Case CV080380, February 27, 1997, <<http://www.jmls.edu/cyber/cases/ioid1.html>>.

^[13]John Fontana, 'Net Domain Plan Draws Fire,' *CMP News*, Issue 644, January 6, 1997.

^[14]Comments of Computer Professionals for Social Responsibility in the NTIA proceeding, August 18, 1997, <http://www.cpsr.org/dns/cpsr_dns1.html>.

^[15]'EU Commission Meeting with TLD Registry Representatives,' report by Niall O'Reilly, University College Dublin Computing Services, April 1997, archived at <<http://www.fitug.de/debate/9704/msg00078.html>>.

^[16]Kent Cukier, 'EC Urges Halt to IAHC Plan,' *Communications Week International*, April 21, 1997.

^[17]Comments of AT&T in the NTIA Notice of Inquiry, August 18, 1997, <http://www.ntia.doc.gov/ntiahome/domainname/email/8_18_97comments.htm>.

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7.3 Challenges to Network Solutions

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Although the gTLD-MoU was unpopular, many stakeholders and policymakers still viewed the Network Solutions monopoly as the fundamental problem. The stalemate over draft-postel and the unappetizing alternative posed by the gTLD-MoU created a mounting sense of frustration, leading to more aggressive tactics.

7.3.1 Antitrust Challenge

One registry entrepreneur chose to challenge Network Solutions using antitrust law. Unlike the other alternative registries, Paul Garrin, the proprietor of Name.Space, believed that all top-level domains should be shared. In January 1996, Garrin established an alternative root that allowed customers to create a new top-level domain name on request. Garrin conceived of the registry as a 'publisher' of names proposed by customers, and exerted only 'editorial' control over the top-level names inserted into the DNS. By mid-1997, Name.Space was supporting approximately 530 new generic words as top-level domain names, such as *.zone*, *.art*, *.music*, and *.space*. In principle, any other company could register second-level names under the TLDs supported by Name.Space, but in order to do so it would have to make heavy investments in software development in order to interoperate with Garrin's system. In that respect Garrin was, like the gTLD-MoU, attempting to establish a new DNS root more or less under his control.

In March 1997, unable to attain critical mass for his alternative root system, Garrin formally asked Network Solutions to amend the root zone file to include Name.Space's top-level domains. Adding the Name.Space toplevel domains to the Network Solutions-operated root zone would have transformed the commercial environment of the DNS. As the only established registry for hundreds of new domains, Name.Space would have been quickly elevated to the status of a peer of Network Solutions. On the other hand, a refusal to add them might be construed as anticompetitive, bringing NSI into conflict with the antitrust laws.

Aware of the legal trap that was being set, Network Solutions deferred Garrin's request, replying that it had an unwritten agreement to refer all such requests to IANA. When the request was passed on to IANA, however, Postel refused to assert or accept any formal legal responsibility. A letter from a University of Southern California lawyer replied, 'We are aware of no contract or other agreement that gives IANA authority over [Network Solutions'] operations. The IANA has no authority to establish a generic top-level domain without an Internet community consensus arrived at through committee review and ample opportunity for public input.'

With IANA deferring to an amorphous 'Internet community consensus,' Network Solutions turned to the National Science Foundation for guidance, sending a formal request to the program officer supervising its cooperative agreement to add new top-level domains. In the meantime, Name.Space filed an antitrust lawsuit in federal district court. ^[18]

In its June 25, 1997, response to Network Solutions, the National Science Foundation rejected the request. The response cited ongoing discussions among the National Science Foundation and several other federal agencies of the 'governance and authority issues raised in your letter.' Because these discussions were not complete, the NSF requested that 'NSI take NO action to create additional TLDs or to add any other new TLDs to the Internet root zone file until NSF, in consultation with other U.S. government agencies, has completed its deliberations in this area and is able to provide further guidance.' ^[19]

In order to strengthen its legal position, in August the NSF issued a clarification that the June 25 letter was intended to be a directive under the 1993 NSI Cooperative Agreement. On September 17, 1997, Name.Space amended its complaint and named both Network Solutions and the National Science Foundation as defendants in its antitrust suit.^[20] The amended complaint also accused NSF of violating free-speech rights guaranteed under the First Amendment by arbitrarily restricting the list of available domain names.

Although Name.Space later lost on all counts, the threat of antitrust liability forced the actors to clarify the formal sources and relations of authority. In response to the lawsuit, Network Solutions denied having any policy authority over the root, looking first to IANA and then to the U.S. government for responsibility. IANA, too, disclaimed authority over Network Solutions, and asserted only 'an equivocal authority over the root, the ability to act on the basis of consensus' (Froomkin 2000). The National Science Foundation, on the other hand, was forced to assume responsibility over Network Solutions through its Cooperative Agreement contract. And the federal government was pushed into arguing that its registry contractor was a government instrumentality.

7.3.2 The Kashpureff Hack

AlterNIC's Eugene Kashpureff took even more radical action. Frustrated with Network Solutions' unwillingness to add new names to the root and the lack of new competition, he exploited a security hole in DNS implementation that allowed him to substitute the IP address of his own computer for the address of the Network Solutions server, and insert that false mapping into the authoritative name server for the InterNIC site. As a result, for a few days in July 1997 most users trying to register names at the Network Solutions-operated InterNIC were redirected to Kashpureff's AlterNIC site, where they encountered a protest message^[21] and a link to the real InterNIC site. 'If they think they own the entire domain name space,' Kashpureff told reporters, 'I've got news for them. Over the weekend, I possessed their name.'^[22]

Kashpureff's domain guerilla warfare was perceived by some as a heroic act of civil disobedience, by others as dangerous and antisocial if not criminal. Either way, he had concretized the vulnerability of the DNS. Network Solutions filed a civil suit against him, which was settled when he paid a token fee and issued a public apology. The U.S. Federal Bureau of Investigation, however, later pursued him on criminal charges of wire fraud (Diamond 1998).

^[18] *P.G. Media Inc., dba Name.Space, v. Network Solutions Inc.*, 97 CV 1946, March 20, 1997, <http://name-space.com/law/litigation_cont.html>. The original complaint also named the Internet Society and the IAHC as 'non-party coconspirators' for their role in forming the gTLD-MoU, but this aspect of the complaint was later withdrawn.

^[19] D. Mitchell, NSF, to David Graves, Internet Business Manager, Network Solutions, Inc., June 25, 1997.

^[20] *PgMedia d/b/a Name.Space v. Network Solutions Inc and the National Science Foundation*, 97 Civ. 1946 (RPP), second amended complaint, September 17, 1997, <http://www.name-space.com/law/litigation_nsf.html>.

^[21] 'By redirecting the domain name 'www.internic.net,' we are protesting the recent InterNIC claim to ownership of '.com,' '.org,' and '.net,' which they were supposed to be running in the public trust. Our apologies for any trouble this DNS protest has caused you. . . . We think we exercised restraint in the use of our latest DNS technology for this protest. We terminated the protest configuration at 8 a.m. Monday, July 14.' Cited in Courtney Macavinta, 'AlterNIC takes over InterNIC Traffic,' *CNET News*, July 14, 1997, <<http://news.cnet.com/news/0-1004-200-320460.html?cnet.tkr>>.

^[22] *Ibid.*

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7.4 The U.S. Government Intervenes

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Up to this point the most powerful potential claimant of the root, the U.S. government, had not taken any initiative. The gTLD-MoU and other developments, however, made it impossible to continue doing nothing. The controversies generated by the gTLD-MoU, the Name.Space litigation, and the impending expirations of IANA's funding and the Network Solutions Cooperative Agreement forced the federal government to either yield or assert responsibility.

7.4.1 The National Science Foundation Exits

The National Science Foundation decided to let go. Both Network Solutions and the Internet technical hierarchy had strong ties to the agency, and NSF seemed to have been immobilized by the bitter feud developing between them. By early 1997 the agency wanted only to extract itself from the whole controversy. ^[23]

In April 1997 the NSF brushed aside a report from its own Inspector General's Office calling for continued federal oversight of Internet names and numbers. ^[24] The report had argued for the imposition of fees on names and addresses to 'supplement the government's investment in the Internet.' The NSF response noted that regulation and taxation of Internet addresses was 'not an appropriate function' for the agency. Instead, it pointed to the IAHC proposals to privatize DNS as one of several 'next-step solutions that are being implemented' and spoke glowingly of the Internet Society as an 'an international organization whose members reflect the breadth of the entire Internet community.' ^[25] The statement announced that NSF had 'no plans to renew or to recompute [the NSI] Cooperative Agreement.' ^[26]

In fact, a few months before, NSF and Network Solutions had agreed in principle to terminate the 1993 Cooperative Agreement a year early, on April 1, 1997. Early termination of the agreement would have given Network Solutions de facto property rights in the .com, .net, and .org registry. Depending on the conditions of the termination, it could have left unresolved the question of whether NSI had property rights in the database of domain name registrants. And it would have further clouded the issue of who had the authority to add new top-level domains to the root. NSF and Network Solutions were also making plans to spin off the IP address registry functions from Network Solutions to an independent American Registry for Internet Numbers (ARIN). ^[27] One Internet veteran wrote that 'it's my feeling the NSF is acting to simply walk away from the situation, leaving it among the contestants, NSI being the strongest, to duke it out.' ^[28]

NSF's exit strategy, however, was interrupted by the intervention of a White House-led Interagency Working Group (see section 7.4.2).

Members of the interagency group wanted more time to consider the issues and the implications of various options before any decisive action was taken. NSF was not allowed to terminate the Network Solutions contract early. Other steps taken at this time seem to have been designed to ensure that the federal government would continue to have direct leverage over the outcome. When Jon Postel's DARPA funding ended in April 1997, for example, he appealed to the private sector IP address registries for support.

The U.S. government suddenly came up with funds from the Energy Department and NASA to continue funding Postel. ^[29]

7.4.2 The White House and the Commerce Department Enter

With the NSF no longer able to set policy, responsibility for formulating U.S. government policy was assumed by the presidential policy adviser Ira Magaziner. Magaziner headed an Interagency Task Force created in December 1995 to develop policy on Global Electronic Commerce on the Internet. As the e-commerce guru for the Clinton administration, Magaziner had made 'private sector leadership' the key principle guiding administration policy.^[30] The emphasis on private sector solutions and industry self-regulation was strongly supported by major industry actors such as MCI Telecommunications, IBM, PSINet, and AT&T.

Domain name issues did not attract Magaziner's attention until December 1996, when the U.S. Patent and Trademark Office, with the backing of the U.S. Department of Commerce, moved to initiate a Notice of Inquiry on trademarks and domain names. According to Magaziner, 'I heard them raising a concern that was backed up by a number of business people that if you ignored trademarks in the issuance of domain names, it could have a negative commercial impact.'^[31] Magaziner had also become aware of NSF's attempt to terminate the Network Solutions contract early, and learned that IANA's DARPA contract was also set to expire in April. Ironically, Magaziner's concept of private sector leadership did not countenance simply walking away. Some voices within the administration and in the corporate world believed that the stability of the Internet would be threatened unless the government created formal arrangements to replace IANA and InterNIC. Magaziner responded by forming a separate Interagency Working Group on domain names in March 1997.

The Interagency Working Group was chaired by Brian Kahin of the White House Office of Science and Technology Policy. Kahin's eventual cochair was J. Beckwith Burr, a lawyer from the Federal Trade Commission who later moved to the Commerce Department when it became the lead agency for the U.S. policy intervention.^[32] Representatives from the National Science Foundation, the Defense Department, the Federal Communications Commission, the Justice Department, the Patent and Trademark Office, and the State Department all participated.

Initially, the U.S. government reacted negatively to the IAHC proposals. The leading role of the ITU in particular seems to have generated antipathy. The Working Group was only a few weeks old when the ITU issued its invitation to the gTLD-MoU's meeting of signatories and 'potential signatories,' scheduled for May 1. A sharply worded reply cable from Secretary of State Madeline Albright to the U.S. mission in Geneva questioned the ITU's authority to call a full meeting of member states without the authorization of national governments. Albright noted that 'the USG has not yet developed a position on any of the proposals to reform the Internet domain name system, including the gTLD-MoU [sic], nor on the appropriate role, if any, of the ITU, WIPO, or other international organizations in the administration of the Internet.'^[33] On May 2, the U.S. press reported that the Interagency Working Group would *not* support the gTLD-MoU. An unidentified member of the group was quoted as saying, 'We are concerned about the possibility that [international] organizations will have too great a role in the process and we won't have a private sector-driven process. There are also some concerns,' the unnamed official said, 'about addressing an Internet-related issue in a forum that has traditionally done telecommunications regulation, like the ITU.'

The working group spent the rest of the spring preparing for a formal public proceeding to solicit input on how to handle the transition. The Commerce Department was chosen to replace the National Science Foundation as the lead agency, and Burr was transferred there. Within the Commerce Department, responsibility for handling the proceeding was assigned to what many considered to be a 'weak, understaffed'^[34] branch, the National Telecommunications and Information Administration (NTIA). On July 1, 1997, a Presidential Executive Order authorized the Secretary of Commerce to 'support efforts to make the governance of the domain name system private and competitive and to create a contractually based self-regulatory regime that deals with potential conflicts between domain name usage and trademark laws on a global basis.'^[35] On the next day, the NTIA opened a proceeding asking for public comment on DNS policy issues.^[36] 'The government has not endorsed any plan at this time,' the document stated, 'but believes that it is very important to reach consensus on these policy issues as soon as possible.' It asked for comment on the appropriate principles to use to guide the transition and on the proper organizational framework, and for suggestions on specific issues such as new TLD creation, shared vs. exclusive top-level domains, and trademark protection. By mid-August, over 430 parties had filed comments in the proceeding (Mathiason and Kuhlman 1998).

7.4.3 Fait Accompli?

The gTLD-MoU partisans had committed themselves to a position from which it was difficult to back down. They had asserted that the root was theirs to dispose of. They believed that their process had been open and legitimate, and had produced a workable consensus of the Internet community. While they were willing to tweak the most unpopular elements of the proposal, they refused to make any concessions regarding their authority, for that would mean prolonging Network Solutions' monopoly and dissipating their first-mover's power to define the agenda and control the new institutions. Thus, as the negative signals from the State Department and the Interagency Working Group came out in the middle of 1997, the IAHC leadership responded by openly challenging the U.S. government's authority. As a contemporary news article reported, 'The ad hoc committee has said it doesn't need the U.S. government's approval to go ahead with its plan. Appointed by the Internet Society, the committee says it has direct control of the computers that run the Net's addressing system through the Internet Assigned Numbers Authority (IANA). The government has 'no choice' but to go along with its plans, IAHC chair and ISOC president Don Heath has said.'^[37]

Indeed, the IAHC members began to execute their plan as if their authority to do so were still unquestioned, in the hope that they would win by default. An interim Policy Oversight Committee was constituted in August 1997 and began to accept money from registrar applicants.

Eventually, 88 companies paid in, creating a fund of nearly US\$1 million. Software development contracts for the shared registry system were initiated, and an implementation schedule was released. January 1998 was set as the starting date for new registrations.

But the IAHC's authority to get their new names into the root was still in doubt. Postel's IANA could plausibly claim policy authority over the root, but Network Solutions actually operated the authoritative A root server, so nothing could be done without its acquiescence. And as a byproduct of the Name.Space litigation, Network Solutions had explicit instructions from the National Science Foundation not to add any new top-level domains to the root. A confrontation was looming. As an IAHC member, David Crocker, noted in the fall of 1997: 'We are fast approaching a critical moment. . . . The moment is the request by IANA for addition of the new generic TLDs (gTLDs) to the root DNS servers. The request will be issued when the gTLD-MoU's CORE project plans require it for testing, prior to live registration operation of these gTLDs. Nearly 90 companies have committed significant funds and effort to this activity, so it's rather more than a theoretical exercise.'^[38]

The U.S. government's intention to make policy through Magaziner's working group and the NTIA proceeding represented a clear threat to these plans. To counter what it viewed as unwarranted intervention by the U.S. government, the IAHC began to seek political support from foreign governments. Thirty-five of the registrars authorized by the interim POC were European companies, and several others were Asian, giving non-U.S. interests a stake in the proposed regime. In a November 13, 1997, email from Crocker to a private CORE email list, acquired and leaked by reporter Gordon Cook, the strategy was stated explicitly: 'It appears that the folks at the U.S. government continue to miss the point that the rest of the world and its governments think that the Internet is a global resource, rather than strictly being an entity belonging to the U.S. Other governments need to communicate their interests in this effort to open up control of Internet infrastructure. It would be very helpful for contingents from non-U.S. countries to band together and lobby their own governments to communicate to the U.S. folks.'^[39]

The situation became even more polarized when U.S. congressional hearings were held on September 30 and October 2, 1997. The hearings were dominated by gTLD-MoU opponents, some of whom played on nationalistic sentiments.^[40]

^[23] Interview with Brian Kahin, May 17, 2000.

^[24] 'The Administration of Internet Addresses,' Office of the Inspector General, National Science Foundation, February 7, 1997. The report argued that 'the public interest requires that Internet address administration remain a governmental activity' and that the government should impose fees on domain name and IP address registrations and use the money to supplement the government's investment in the Internet.

^[25] W. Bordogna, NSF, memo in response to OIG report, April 17, 1997.

^[26] Ibid.

^[27] 'US Federal Gov't Decides to Solve DNS Problem-Rug Pulled out from under NSF,' *Cook Report*, March 28, 1997.

^[28] Karl Auerbach statement in Freed collection.

^[29] David Conrad, interview with author, August 23, 2000. Conrad, as head of APNIC at the time, committed US\$50,000 to IANA support and reported that RIPE-NCC had committed US\$25,000.

^[30] Magaziner had also been in charge of the Clinton administration's abortive health care reform initiative. That initiative had received a brutal response in part because it attempted to socialize a larger part of the U.S. health care system. More than one internal observer of Magaziner's role in the creation of ICANN felt that he was motivated in part by a need to redeem himself for the health care fiasco. Magaziner went to extraordinary lengths to actively consult with as many actors in the private sector as possible.

^[31] Gordon Cook, transcript of interview with Ira Magaziner, September 24, 1998.

^[32] The original co-chair was Bruce McConnell of the Office of Management and Budget, but he became an inactive member and was replaced by Burr in July 1997.

^[33] State Dept cable; on file with author.

^[34] Interview with Brian Kahin, May 17, 2000.

^[35] Presidential Directive on Electronic Commerce, memorandum for the heads of executive departments and agencies, July 1, 1997.

^[36] Request for Comments in the Matter of Registration and Administration of Internet Domain Names, U.S. Dept of Commerce, Doc. No. 970613137-7137-01, July 1, 1997.

^[37] 'US Rejects Net Name Plan,' May 2, 1997, <<http://yahoo.cnet.com/news/0-1005-200-318681.html>>.

^[38] Email to *gtld-discuss* mailing list, October 1997.

^[39] Email, Gordon Cook to *com-priv* list, November 14, 1997; on file with author.

¹⁴⁰U.S. Congress, House Science Committee, Subcommittee on Basic Research, Hearing on Internet Domain Names, September 30, 1997, <http://www.house.gov/science/pickering_9-30.html>.

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The NTIA was supposed to issue a policy statement based on the public comments in early November. That date was repeatedly postponed because of the intense lobbying and the extensive stakeholder consultations of Magaziner, Kahin, and Burr. The MoU forces were adding signatories, trying to build momentum, and urging the Interagency Working Group to accede to the addition of its new gTLDs to the root. Its opponents, including Network Solutions and the alternative registries, wanted the NTIA proceeding to start from a clean slate. Finally, on January 28, 1998, the NTIA published online a Notice of Proposed Rulemaking. The document, known as the Green Paper because of its status as a discussion draft seeking an additional round of comments, was a tremendous blow to the Internet Society and its backers.

In the Green Paper, the U.S. government asserted its authority over the name and address root but also indicated its intention to relinquish that authority in a way that involved Internet stakeholders internationally. Much to the chagrin of the MoUvement, the document did not recognize IANA's relations with the Internet Society and did not even mention the IAHC process that had produced the gTLD-MoU and CORE.

Instead, the Green Paper was a relatively straightforward privatization proposal, putting forward some basic principles to guide the federal government in transferring the IANA functions to a private not-for-profit corporation.^[41] The proposal repeatedly recognized that international 'stakeholders want a larger voice in Internet coordination,' and pledged that the new governance arrangements would 'ensure international input in decision making' but nevertheless asserted that the U.S. government had to direct the transition because of its responsibility for the contractors in control of the root and the need for stability. As a governance structure, the Green Paper proposed a 14-member board of directors drawn in a balanced fashion from various stakeholder groups.^[42]

To open up the domain name market to competition, the Green Paper offered several key policy decisions. It proposed to authorize five new registries, each assigned one new top-level domain name. The low number was characterized as a cautious compromise between those who wanted no new TLDs at all and those who wanted many more; the new domains would serve as an experiment in the effects of registry-level competition. Competition within top-level domains would be fostered by shared access to registries. Both the new domains and the existing *.com*, *.net*, and *.org* domains would be opened up to competing registrars, and Network Solutions would be required to separate its registry and registrar businesses.

On trademark questions, the Green Paper specifically rejected waiting periods and a moratorium on new top-level domains as acceptable policy alternatives, and questioned the need for a uniform dispute resolution policy. Instead, it proposed that gTLD registries be required to select their own dispute resolution processes that met some minimum criteria specified in the Paper.^[43]

Prior to the release of the Green Paper, on December 10, 1997, Magaziner had met with Jon Postel in Washington. Magaziner related what he called good news and bad news to Postel. The good news was that he had found funding for IANA that would last until September 30, 1998, the date when the new corporation envisioned in the Green Paper would be up and running. The bad news was that it would be the U.S. government, not Postel or IANA, that would decide whether and when new TLDs would be added to the root.^[44]

Magaziner's warning made it clear to Postel, more than a month before the release of the Green Paper, that the U.S. government was not going to stand aside while the Internet Society, CORE, and POC took control of the root. Apparently concerned about the direction U.S. policy was taking, Postel on January 28 arranged for a challenge to U.S. authority that rivaled the gTLD-MoU in boldness. Postel organized a redirection of the root- what he later referred to as a test and others called a hijacking of the root.

The authoritative root zone file was hosted on the A root server operated by Network Solutions. NSI's operational control of the root was, of course, the chief impediment to the gTLD-MoU's ability to implement its plan. On that date in January, only two days before the public release of the Green Paper, Postel sent an email message to all the secondary root servers calling for a coordinated shift to IANA as the source of the authoritative root zone file. 'At some point down the road,' Postel wrote, 'it will be appropriate for the root domain to be edited and published directly by the IANA. As a small step in this direction we would like to have the secondaries for the root domain pull the root zone (by zone transfer) directly from IANA's own name server.' Based on these instructions from Postel, eight of the twelve root servers were modified to take their authoritative zone files from Postel's name server. Root servers B, C, D, F, I, K, L, and M-all of the servers at universities and research institutes, including RIPE and Nordunet in Europe-participated in Postel's 'test.' Servers E, G, H, and J-the ones at NASA, the U.S. military network, the Ballistics Research Lab, and NSI-did not. The claim to authoritative root server status was in play.

Although Postel later downplayed the significance of the event, there can be little doubt that the redirection was a direct challenge to U.S. government authority. Paul Vixie, who operated the K root server that participated in the redirection, conjectured that 'he was firing a shot across the bow, saying [to NSI] you may have COM, but I've got the dot.'^[45] Vixie himself asked a friend the night before it happened to watch over his family if he went to jail.^[46]

The implications of a coordinated redirection of the root were not lost on anyone. Although he did not do so, Postel *could* have added to the root server system the new gTLDs proposed by the gTLD-MoU. Had he done so, however, the result would have been two different Internet roots, possibly fragmenting Internet connectivity.^[47] Magaziner and Burr learned of the redirection as they were putting the finishing touches on the Green Paper. Postel was ordered to return the root servers' configuration to their original state, and he complied. Magaziner later publicly stated that any attempt to manipulate the root without the U.S. government's permission would be prosecuted as a criminal offense.

^[41]Stability, competition, private, bottom-up coordination, and representation were adopted as the basic principles to guide the transition.

^[42]Three would be appointed by the Regional Address Registries, two by the Internet Architecture Board, and two by an as-yet-nonexistent 'membership association of registries and registrars.' The remaining seven members would represent Internet users, to be elected by an (also nonexistent) Internet users' members association.

^[43]The minimum requirements involved a searchable database, accurate contact information, selection of a 'readily available and convenient dispute resolution process that requires no involvement by registrars,' and suspension of a domain name during a dispute if a trademark owner objected to it within 30 days of its registration. Green Paper (NTIA 1998a), Appendix 2, p. 8833.

^[44]Email, Cook to author, August 12, 2000, with quotations from Magaziner interview, December 10, 1997.

^[45]Interview with Paul Vixie, July 18, 2000.

^[46]Email, Brian Reid to author, August 12, 2000.

^[47]For news coverage of this event, see Sandra Gittlen, 'Taking the Wrong Root?' *Network World*, February 4, 1998; Ted Bridis, 'Clinton Administration Says Internet Reconfiguration Was Rogue Test,' Associated Press, February 5, 1998.

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8.1 From Green Paper to White Paper

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The release of the Green Paper quickly polarized the governance debate around the issue of the U.S. government's role.^[1] Under the Green Paper, domain name system (DNS) privatization would have taken place in a U.S. legal and institutional framework, possibly as rule-making subject to the U.S. Administrative Procedures Act.^[2] Most participants in the United States welcomed the procedural solidity that the U.S. Commerce Department proceeding brought to what had been a chaotic process, even if they wanted to modify specific aspects of the policy.^[3]

The groups that opposed the Green Paper, on the other hand, reviled it as U.S. coup d'État that took no heed of the international character of the Internet. Opponents saw it as a form of intrusive government intervention in the affairs of what had been a self-governing community. These included, of course, the U.S.-based Internet Society and other members of the Generic Top-Level Domain Memorandum of Understanding (gTLD-MoU) coalition, which rejected the authority of the U.S. government. Indeed, the Green Paper ended up firmly uniting the European Commission (EC) and policymakers in the few involved national governments with supporters of the gTLD-MoU, despite their earlier rejection of the initiative as 'too U.S.-centric.'^[4]

8.1.1 Fighting the Green Paper

The gTLD-MoU had been formed around an international network composed of members of the technical community, prospective registrars, and intergovernmental organizations. That network was now leveraged to arouse significant opposition to the U.S. government's proposal. The Council of Registrars (CORE) utilized the US\$1 million in registrar application fees it had collected to hire a public relations firm and a lobbyist.^[5] The Internet Society and CORE organized a campaign to file comments in the National Telecommunications and Information Administration (NTIA) proceeding, rousing their membership with emailed calls to action and setting up Web sites with ready-made messages to file in the proceeding. Ironically, given the MoU's cartel-like structure and alliances with intergovernmental organizations, the campaign relied heavily on libertarian rhetoric. The 'self-governance' and 'private sector leadership' of the gTLD-MoU were contrasted with the 'governmental meddling' proposed by Magaziner and NTIA. The plan for competing, for-profit registries was decried as monopolistic. The campaign paid off, as NTIA received a flood of ISOC- or CORE-inspired responses.^[6]

Key CORE executive committee members and prospective registrars were located in Australia and Europe.^[7] As representatives of business interests seeking entry to a U.S.-dominated market, their efforts aroused interest and support from their domestic governments. The CORE interests were particularly successful at turning the European Commission and the government of Australia against the Green Paper. The EC's harshly critical response to the Green Paper charged that 'The U.S. Green paper proposals appear not to recognise the need to implement an international approach. The current U.S. proposals could, in the name of the globalisation and privatisation of the Internet, consolidate permanent U.S. jurisdiction over the Internet as a whole, including dispute resolution and trademarks used on the Internet.'^[8]

The government of Australia intervened through its National Office for the Information Economy, directed by Paul Twomey, a protégé of Senator Richard Alston. It criticized the Green Paper for its 'unduly dominant role for U.S. jurisdiction and interests,' for failing to describe how the governing body would be accountable to national interests, and for its two-year reservation of U.S. government 'policy oversight' over the root.^[9] Whereas U.S. commentators tended to support the Green Paper's call for quick decisions on new domains, European and Asian interests urged NTIA to defer all such decisions so that a new, internationally representative organization could make them.

Opposition to the Green Paper had more to do with who would be in control of the transition than the actual policies that would be adopted. Both the Green Paper and the gTLD-MoU would have created a handful of new top-level domains, instituted shared registries, and pushed toward some form of linkage between registries and dispute resolution.^[10] Moving forward under U.S. government auspices, however, would have weakened the influence of the gTLD-MoU framers and the international organizations that had been assigned powerful positions within its framework. The European Commission and other national governments would be reduced to the status of commentators and observers.

8.1.2 Assembling the Dominant Coalition

At some time between the January release of the Green Paper and the June release of the final policy statement, organized business lobbying groups spearheaded the formation of a dominant coalition. Political leadership came from the Internet divisions of IBM and MCI.

The key vehicle for organizing business interests was the Global Internet Project (GIP). GIP was formed in 1996 by high-level executives of 16 Internet, telecommunications, and e-commerce firms.^[11] Its objective, which had taken shape during the controversies over encryption and content regulation in the mid-1990s, was to resist 'unnecessary international regulations and national laws that impede or inhibit [the Internet's] growth.' Ironically, one could hear from the corporate backers of a process that would lead to the institutionalization and regulation of the Internet faint echoes of the libertarian rhetoric of John Perry Barlow. The group's mission statement claimed, 'Old, outdated, national regulatory models should not be applied to the Internet. Instead, new international and nongovernmental approaches to policy must be developed, that will be flexible enough to keep pace with the rapid evolution of technology and the marketplace. Often these approaches will rely upon market mechanisms for self-regulation, rather than government regulation.'^[12]

IBM's vice president for Internet technology, John Patrick, took over leadership of the group early in 1998. Shortly thereafter, GIP began to focus on Internet governance. While its small core of executives set strategy for the group, plans were executed by the Information Technology Association of America (ITAA), a Washington-based business lobby claiming 10,000 members in 1998. ITAA in turn was the central secretariat of a consortium of information technology industry associations from 41 nations known as the World Information Technology and Services Alliance (WITSA).

The business leaders behind GIP were, naturally enough, deeply involved in the Clinton administration's attempt to develop a global framework for electronic commerce, and encouraged Magaziner's policy of private sector leadership. At the release of the Clinton administration's e-commerce framework in July 1997, IBM president Lou Gertsner spoke on an equal status with the President and Vice President. The relationship to the White House was solidified in December 1997, when Patrick hired Mike Nelson into IBM's government affairs office and put him to work promoting GIP's agenda. Nelson, an influential member of the White House Office of Science and Technology Policy, had supervised many of the Clinton administration's National Information Infrastructure initiatives. Before that, he had drafted the High Performance Computing Act as Senator Albert Gore's staff member. At about the same time it hired Nelson, IBM recruited Brian Carpenter, the CERN scientist who chaired the Internet Architecture Board (IAB). MCI-Worldcom, which was emerging as the world's dominant Internet backbone provider, was also an active, founding member of GIP. Sometime in the middle of 1998, Vint Cerf, a vice president at MCI, began to work directly with GIP on its Internet governance initiatives. MCI had other strategic ties to the technical community as well: John Klensin, an IAB member since 1996, was an MCI employee.

Later, IBM's Internet division would play a highly visible role in the selection of ICANN's initial board. With MCI, it would later engineer fundraising and public relations support for the new organization and even come to its financial rescue at a critical time in its evolution.^[13] In 1999, ITAA and WITSA would play a decisive role in defining a representational structure for the new Domain Name Supporting Organization that made business and trademark interests dominant. IBM's involvement in Internet governance was motivated both by its concerns about trademark dilution and more fundamentally by its strategy of developing a robust e-commerce industry over the Internet. The latter required creating a stable, predictable institutional framework for root administration. A stable administration would not rock the boat by permitting, willy-nilly, the entry of hundreds of new registries and would take strong measures to preserve brand identities.

In many respects, the coalition's core members bore a striking resemblance to the IBM, MCI, and University of Michigan consortium that had operated the National Science Foundation's Internet backbone from 1987 to 1995. In the course of developing the NSFNET backbone, IBM, MCI, a few key university network administrators, and the Internet technical hierarchy all cultivated close working relationships with federal agencies to gain access to funding. Professional linkages among the members of these organizations were maintained through organizations such as the Federal Networking Council Advisory Committee, Educom, and the Internet Society.

But the NSFNET backbone group was a *domestic* coalition and thus could work within an established framework of national laws, regulations, and policies. Internet governance was irretrievably international, and most key players were united in the premise that they did not want to work through established international institutions such as the International Telecommunication Union (ITU). Nor did they want the problem to be solved via new treaties or new forms of collective action among nationstates. What then did they want? Prior to the White Paper, the constituents of what would become the dominant coalition were divided or uncoordinated on that question.

The gTLD-MoU had pioneered an international alliance but lacked the unified support of two critical constituents: the U.S. government and big business. The U.S. government was uncomfortable with the prominent role of the ITU, and at odds with the Internet Assigned Numbers Authority (IANA) and the Internet Society over their attempts to privatize the root on their

own initiative. Though MCI had been a strong supporter of gTLD MoU, IBM and AT&T had withheld their support because of trademark concerns. IBM executives also had been alienated by the 'arrogance' of some of the International Ad Hoc Committee (IAHC) members. [14]

During the development of the White Paper, Magaziner and GIP would play a key role in unifying the technical hierarchy, trademark holders, and larger telecommunication and information technology companies around a common agenda. Magaziner, who had been in close communication with Postel and other IAB members during the preparation of the Green Paper, [15] came to agree that the new governance organization should be a continuation of the existing IANA. [16] The governance entity should be incorporated in the United States, not in Europe as the gTLD-MoU had proposed, but the board should be internationally representative. There would be no new top-level domains until the concerns of trademark holders were taken care of.

The emerging political linkages among these groups were illuminated by a related development. On February 11, 1998, Jon Postel and Brian Carpenter, an IBM Internet division employee and chair of the Internet Architecture Board, jointly announced the creation of an IANA Transition Advisors Group (ITAG). ITAG was a six-member committee composed of senior members of the Internet technical hierarchy: Carpenter, Randy Bush of Verio, Inc. (an Internet service provider), David Farber of the University of Pennsylvania, Geoff Huston of Telstra (the dominant Australian telecommunication provider), John Klensin of MCI, and Steve Wolff, former director of the National Science Foundation's Computer and Information Sciences and Engineering Division, who now worked for Cisco. All were technical people long associated with IETF inner circles.

The purpose of ITAG was to advise Postel on how to handle the transition from a U.S.-government-funded set of functions to a new international nonprofit corporation with a formal board of directors. The news release claimed that the group would pay 'particular attention to its open, international governance.' The formation of the group shortly after the release of the Green Paper and Postel's root redirection debacle signaled recognition by the technical hierarchy that it had to come to terms with the ongoing U.S.-government proceeding.

Winning the support of Postel and the technical community would bring into the fold an international network of stakeholders with control of important resources. This included the regional address registries in Asia and Europe, root server operators in London, Norway, and Japan, and many operators of country code top-level domains (ccTLDs). Most ccTLD operators were affiliated with universities or government research networks that had received their delegations directly from Postel.

The U.S. government in turn served as the bridge between the U.S. corporate and technical groups and other national governments and international organizations. Almost by default, it became the accepted intermediary for resolving the institutional problem. But as it learned from the reaction to the Green Paper, it had to stay in the background rather than the foreground. Thus, it would impose some basic principles and constraints on the process and serve as a guarantor of the emerging institution's stability, but defer key policy decisions to the new entity. The U.S. government also came to defer to European pressure to allow an international organization, WIPO, to take the lead in resolving the trademark problem. [17] While non-U.S. parties succeeded in extracting important concessions from the U.S.-centered interests, they stood at the periphery rather than the core of the 'dominant coalition.' In the progression from gTLD MoU to the White Paper, ITU in particular lost status and influence.

Stakeholders ignored, excluded, or marginalized by the dominant coalition included Network Solutions (NSI), the alternative registries, smaller Internet service providers and their trade associations, civil society and civil liberties organizations, and the governments of developing countries. As the following discussion shows, the policy agendas of these interests were too far removed from those of the coalition to be accommodated. Network Solutions still had significant bargaining power, and its exclusion would pose severe problems for the new institution. Most of the other interests, however, having no viable claim on or control of strategic resources, lacked the bargaining strength to challenge the dominant coalition. Figure 8.1 shows the composition of the coalition.

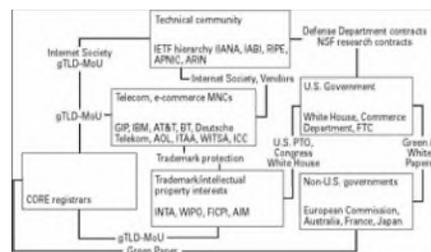


Figure 8.1: The dominant coalition, 1998

8.1.3 The White Paper

The Clinton administration released its final plan, the so-called White Paper, on June 3, 1998 (NTIA 1998b). The White Paper surprised everyone who was not privy to the behind-the-scenes negotiations that created it. It took the form of a nonbinding 'statement of policy' rather than a rulemaking document, and it abandoned direct action by the U.S. government. No new TLDs would be authorized. No competing registries would be recognized. No binding decisions about the structure or composition of the new corporation's board would be made. Instead, the Commerce Department merely announced its intention 'to recognize, by entering into agreement with, and to seek international support for,' a new not-for-profit

corporation to administer policy for the Internet name and address system. The department would simply wait for 'private sector stakeholders' to form a corporation suitable for its recognition. It asked that the private sector be ready with a 'consensus-based' proposal in time for the expiration of the Network Solutions contract on September 30, 1998. Ostensibly, it was now up to the warring factions of the Internet to settle the issues. ^[18]

Although it allowed the private sector to create what it called NewCo and define its board and structure, the White Paper did prescribe its characteristics in some detail. It should be headquartered in the United States. Its board of directors should be 'internationally representative' and balanced to equitably represent various 'stakeholders.' These were identified as IP address registries, domain name registries and registrars, the technical community, Internet service providers, and users including commercial entities, noncommercial users, and individuals. Government officials should not be allowed on the board. The White Paper contemplated the appointment of an interim board to jump-start the new corporation. In general, the corporation should be governed on the basis of open and transparent decision-making processes.

The White Paper also described in some detail the policies it thought NewCo should adopt. The Commerce Department pledged that it would revise its agreements with Network Solutions to 'take actions to promote competition,' which meant opening up the generic top-level domains to competing registrars. The globally dominant registry would also be required to 'recognize the role of the new corporation to establish and implement DNS policy.' Regarding domain name disputes and trademark protection, the statement abandoned the Green Paper's registry-centered approach and came out in support of a uniform dispute resolution policy. Moreover, it deferred to WIPO, asking it to initiate a global consultative process to develop recommendations for a uniform dispute resolution system and policies to protect famous trademarks in new top-level domains. It also called for an independent study to evaluate the effects of new top-level domains on trademark holders. The work of the IAHC was explicitly recognized.

To those who drafted it, the policy statement outlined a bargain capable of satisfying a coalition of some of the most powerful claimants: the U.S. government; IANA, the Internet Society, and the IAB; the major industry players orchestrated by GIP; the trademark interests; and the European Commission and other involved national governments. Behind the scenes, these groups had made a tenuous peace. The new organization would be 'built around the existing IANA.' ^[19] This won the enthusiastic support of the Internet Society and the gTLD-MoU parties, ^[20] and the GIP members, who had strong ties to, or directly employed, many of the leading technical people. Business interests also favored the concept of private sector leadership and a reduced role for government action. And, like the other trademark interests, they were relieved about the delay in new top-level domains and the promise of a dispute resolution system designed by WIPO. The European Commission, which had been given advance drafts of the document, approved of the fact that the U.S. government was leaving specific policy decisions to a new organization that would be internationally representative. ^[21] Foreign governments were also happy that Network Solutions' gTLDs would be opened to CORE registrars and that an international organization, WIPO, had been given an important role in resolving the trademark problem.

^[1] Comments on the Green Paper are still posted at <<http://www.ntia.doc.gov/ntiahome/domainname/130dftmail/>>.

^[2] For a detailed legal discussion of the implications of the Administrative Procedures Act and its avoidance in the creation of ICANN, see Froomkin (2000). Ultimately the Commerce Department chose a mode of action designed to avoid the APA, but at the Green Paper stage, there was still the possibility that the privatization process would occur under the Act. See the comments of J. Beckwith Burr, Transcript of a Public Hearing with Ira Magaziner, White House Advisor, and Beckwith Burr, Associate Administrator, NTIA, Department of Commerce, Washington, D.C., February 23, 1998, <<http://www.ntia.doc.gov/ntiahome/domainname/130dftmail/feb23transcript.htm>>.

^[3] Network Solutions and the alternative registries supported the general thrust of the proposal. IBM praised the Green Paper as 'basically sound and workable.' Educom commented that 'the Green Paper provides a robust blueprint for addressing many current problems with management of Domain Names, and is strongly endorsed by the higher education networking community.'

^[4] The Australian government's comments, for example, criticize the Green Paper for not mentioning the gTLD-MoU, even though they 'do not necessarily support it.' The Australian government's policy critique of the Green Paper followed the same lines as the MoU movement's, insisting that registries should be administered as a monopoly, nonprofit 'public trust' instead of by for-profit enterprises, and rejecting the nonuniform dispute resolution approach of the NTIA proposal.

^[5] Interview with Don Heath, June 19, 2000.

^[6] Of the 50-odd emailed comments filed on March 21 and 22, the second and third days before the deadline, nearly three-fourths came from individual ISOC members or CORE participants; 17 of the responses were identical. See note 1.

^[7] The CORE executive committee at this time consisted of Werner Staub (Switzerland), Siegfried Langenbach (Germany), Ivan Pope (U.K.), Leni Mayo (Australia), and Trevor Hayes (Australia).

^[8] Council of the European Union, European Commission: 'Internet Governance: Reply of the European Commission and Its Member States to the U.S. Green Paper,' March 16, 1998.

^[9] Response of the Commonwealth Government of Australia to the Proposed Rule of the United States Department of Commerce, <<http://www.ntia.doc.gov/ntiahome/domainname/130dftmail/Australia.htm>>.

^[10]The issue of for-profit registries and the uniformity of the dispute resolution procedure were both points of substantive policy difference between the two proposals.

^[11]Its founding members were Netscape (acquired by AOL by 1999), MCI, IBM, AT&T, Deutsche Telekom, Oracle, Visa International, NEC, Fujitsu, Sun Microsystems, BBN Planet, and EDS.

^[12]From the GIP Web site, <<http://www.gip.org/>>. Compare this to Barlow's 'Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather. . . . Where there are real conflicts, where there are wrongs, we will identify them and address them by our means. We are forming our own Social Contract. This governance will arise according to the conditions of our world, not yours.'

^[13]In June 1999, when ICANN was desperate for funds, Vint Cerf and Mike Nelson mounted an appeal to the Internet industry for US\$1 million in 'bridge funding.' According to Cerf, 'I would then launch a campaign with GIP, ITAA, Internet Society, and other interested groups on the basis that ICANN must succeed or Internet will be in jeopardy.' Despite fund-raising appeals to Silicon Valley, only MCI WorldCom and Cisco were willing to provide loans for US\$500,000 and US\$150,000, respectively. Email, Gordon Cook to Telecom Digest email list, September 1, 1999; on file with author.

^[14]Interview with Roger Cochetti, June 2, 2001. A group of major IBM executives had been treated to a presentation by the IAHC members at a very early stage, either late December 1996 or early January 1997. They came out of the meeting, according to Cochetti, unimpressed with the claims of the IAHC that they already controlled the root and convinced that the brash IAHC members failed to comprehend the need to cultivate the needed political support.

^[15]Interview with Scott Bradner, July 19, 2000.

^[16]The IAB had not, however, completely abandoned the gTLD-MoU. Its meeting minutes reveal that it continued to nominate representatives to the MoU's Policy Oversight Committee as late as June 1998. IAB Minutes for June 9, 1998.

^[17]A source at WIPO who wishes to remain anonymous thinks that Magaziner really did believe that technical coordination concerns were paramount and that trademark issues were a distraction. After agreeing (thanks to European pressure) to permit WIPO to perform its role, he expected to bury or sidestep the issue in that way.

^[18]A revealing public statement by Magaziner shortly after the release of the Green Paper provides insight into the motivation behind the U.S. Government's approach to the White Paper: 'The easiest thing for us would be if we could punt on this. That is, if we could say, 'We're lame ducks. We're getting out of this. Let's wait for this new organization, and we're not going to change anything until that comes into being.' And that would certainly make our job easier. [But we are convinced] that it would delay the onset of competition. And so that's why [in the Green Paper] we went against our better visceral judgment about what was in our own best interests, and said, we'll go ahead and try to create this transition. . . . But if there was an overwhelming set of opinions from the broad community that said, 'No, just wait,' then I'm sure we would be amenable to listening to that.' Transcript of a Public Hearing with Ira Magaziner, White House Advisor, and Beckwith Burr, Associate Administrator NTIA, Department of Commerce, Washington, D.C., February 23, 1998.

^[19]Internet Architecture Board minutes, June 9, 1998.

^[20]Don Heath told the press that 'the final policy represents a victory for the Internet Society-influenced Generic Top-Level Domain Memorandum of Understanding (MoU). 'It's excellent,' he said, that government had decided to leave Internet governance to users and the private sector instead of governments.' Will Rodger, 'Government Hands Domain Name Reins to Private Sector,' *ZDNet News*, June 5, 1998.

^[21]A European Commission Council meeting dated May 19-several weeks before the publication of the White Paper-noted, 'The U.S. authorities are now in the process of drafting a White Paper which, according to Commissioner Bangemann, seems to take into account many of the concerns expressed in [Commission's response to the Green Paper].' Minutes of European Commission 2096th Council Meeting, Brussels, May 19, 1998, 8529/98 (Presse 149).

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8.2 The International Forum on the White Paper

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But the White Paper had broadcast a profoundly mixed message. Read from a viewpoint less cognizant of the insiders' bargain, the White Paper seemed to embody a sincere commitment to self-governance and a willingness to accept whatever the broader Internet community decided to do. Many people involved in Internet governance took the call for a private sector-led consensus at face value and welcomed the challenge. They interpreted the White Paper as an opportunity to come together on neutral territory and forge an unconstrained consensus on what would be the new corporation's structure, powers, initial board members, and management. The U.S. government actively encouraged that perception. It 'repeatedly and publicly encouraged all Internet stakeholders . . . to participate in an open, consensus-driven process.'^[22] That optimistic spirit led to the series of truly self-organized meetings known as the International Forum on the White Paper.

8.2.1 Bringing the Parties Together

The first to respond to the White Paper's call for private initiative were Anthony Rutkowski, who had become a consultant for Network Solutions, and Kathryn Kleiman of the Domain Name Rights Coalition (DNRC). Both represented interests outside the dominant coalition. They proposed a Global Incorporation Alliance Workshop in Reston, Virginia.^[23] Tamar Frankel, someone with experience in mediating corporate governance and industry self-regulation negotiations, was tapped to lead the workshop. Members of the Internet Society and CORE initially balked at participating in the event. The concept of an open process that brought all the contending parties together, however, gained support and momentum. In mid-June, trade associations of ISPs publicly came out in favor of the workshop and proposed to expand it to a series of face-to-face meetings around the world.^[24] The incorporation workshop was renamed the International Forum on the White Paper (IFWP). A steering committee for the IFWP was organized that, rather remarkably, managed to seat representatives of nearly all the warring parties.^[25] In July the European Commission organized a European consultative meeting to prepare for the IFWP meetings, resulting in the establishment of the EC Panel of Participants, a group of stakeholder representatives to advise the commission and develop a common position in the IFWP process. By the second meeting in Geneva, the Harvard University Law School's Berkman Center was helping to moderate meetings and archive its activities. In Latin America, a new Internet association was formed partly in response to the Buenos Aires IFWP meeting. Country code top-level domain name administrators also began to organize in its wake.

In parallel with the IFWP process, however, IANA and ISOC pursued their own agenda. Following the advice of his IANA Transition Advisory Group, Postel had acquired the services of a lawyer, the prominent Washington antitrust counsel Joe Sims of Jones, Day, Reavis and Pogue. Sims worked with Postel to draft articles of incorporation and bylaws for the new corporation. Sims proposed a closed corporation dominated by the technical community. It would incorporate under California law as a nonprofit public benefit corporation, a structure typically used for educational and charitable organizations. Half of the board would be self-selected by the initial board members. The other half would be appointed by functional constituencies called Supporting Organizations. Two of the three Supporting Organizations (addresses and protocols) would be controlled by the technical community. The composition of the third Supporting Organization, devoted to domain names, was not specified, but presumably was intended to represent business and user stakeholders in line with the criteria of the White Paper.

Sims attended most of the IFWP meetings, and Postel himself appeared briefly at the Geneva meeting, which overlapped with the Internet Society's annual convention. It gradually became evident, however, that the interests lined up behind IANA did not consider the IFWP process to be the real arena for arriving at a decision. Instead, Postel and Sims made it clear that they intended to use their own draft articles and bylaws as the basis for incorporation and would decide unilaterally whether to amend them or not based on comments submitted to the IANA Web site and informal consultations among their acquaintances in the dominant coalition. Postel's refusal to fully participate in IFWP began to grate on the groups and individuals involved, who believed that IFWP incorporated the consensual process called for in the White Paper. Frustration with IANA's refusal to modify its draft led to the drafting of an alternative proposal in August.

As the IFWP meetings progressed, it became clear that the open process was producing consensus around an organizational model sharply different from the one proposed by Sims and Postel. The public benefit corporation proposed by Sims vested significant power in the board and management, and gave the board sweeping powers to unilaterally change its structure by amending the bylaws. Accountability to a community of stakeholders was minimal. As Tamar Frankel (1998) observed,

A public benefit organization does not insure a balance of power among the different stakeholders. In fact, it negates the existence of stakeholders, and the need for a balance of power among them. . . . It is assumed that the board and the president . . . know what is good for all these groups and for the [community] as a whole. Further, the corporation by definition negates the need for protection against capture. Captured altruism and idealism are welcome. In short, this type of organization vests in its board virtually unrestricted powers to manage, structure, and restructure the corporation. Whether the corporation will fulfill its declared and future mission depends on . . . the good will and trustworthiness of the members of the board, not on the constitutional documents that vest power in the board. (2)

The IFWP process, in contrast, proposed a nonprofit, membership-based organization managed and controlled by an elected board representing various interest groups. This model was based on the assumption that the participants in the new organization would serve not because they were altruistic, but in order to advance their business, professional, or personal interests; hence, the organization was set up like a business corporation that substituted members for shareholders.

8.2.2 The Process Breaks Down

Tensions between these two parallel processes—the open, democratic proceedings of the IFWP and the private, informal networking of IANA—steadily mounted during the summer of 1998. The growing gap between the technical community's loyalty to Postel and the legal and political concerns of the IFWP was dramatized at the Forty-Second IETF meeting in Chicago on August 26. Postel and the IFWP's Frankel were both present at the plenary session. With IAB chair and IBM employee Brian Carpenter in control of the agenda, an emotional endorsement of the Postel-Sims draft was orchestrated. Carpenter read a 'draft declaration of IAB support and IAB endorsement' for the Postel-Sims draft and asked the meeting for a 'rough consensus' endorsement of it. A member of the audience stood up and asked the attendees to give Jon Postel a standing ovation 'for all his good work over the last 20 years and his work on his latest 'new IANA' draft.' Postel's efforts were endorsed by acclamation, with a few notable exceptions. ^[26] Nearly all of those present had never read either proposal. ^[27]

Matters came to a head in late August, when the supporters of the IFWP tried to finalize their process. Two additional meetings were proposed: a restricted session that would bring the key stakeholders together in a closed negotiating session to finalize a constitution and interim board for the new corporation, and a public ratification meeting that would review those decisions and assess community input on them. There was also talk of an online voting process among IFWP participants to elect the initial board and to extend the ratification process to those who could not attend the meeting. Harvard's Berkman Center offered to host and mediate the meetings in Boston. The negotiating session was scheduled for September 12-13, and the ratification meeting was set for September 19.

Most stakeholders, including Network Solutions, had indicated their willingness to participate in the negotiating session. But IANA refused. Although most IFWP participants were unaware of it, their attempts to make IFWP into an authoritative arena for collective action posed a serious threat to the expectations and plans of the dominant coalition. It was one thing for the IFWP meetings to formulate resolutions and consensus points about broad issues. If IFWP hosted a real 'constitutional convention,' however, it threatened the hegemony of IANA and GIP over the incorporation process. As one participant in the negotiations recalled, '[Joe] Sims resisted the idea of a [final] meeting; he wanted to bypass IFWP completely.' ^[28] To subject Sims's and Postel's incorporation proposals and interim board selections to approval and modification by an open, international forum that included many opponents and critics would be to risk losing control over the results.

As a loosely organized, informal group, the IFWP steering committee was in no position to resist centrifugal pressures. The committee contained several supporters of the IANA faction who obstructed attempts to push the IFWP process forward to authoritative decisions. In late August, prodded by Sims, the pro-IANA members of the steering committee withdrew their support for IFWP in order to allow IANA to take charge of the incorporation process. Mike Roberts of EDUCAUSE was particularly adamant about closing down the IFWP. ^[29] Only later did it become known that Roberts had already been tapped to serve as the first president of ICANN. Lacking sufficient backing and participation, Harvard and the IFWP steering committee canceled the final meetings, and the IFWP itself fell into disarray. From this point on, IANA became the undisputed focal point of the incorporation process. With control secure, the Global Internet Project held a press conference

a few days after the IFWP had been disposed of, announcing its plans to raise start-up funding for the new nonprofit organization.^[30]

The breakdown of the IFWP process concerned Magaziner and Burr. They urged IANA and Network Solutions to resolve their outstanding differences in some other way. The two parties' legal teams entered into private negotiations, and on September 17 released draft articles of incorporation and bylaws for an Internet Corporation for Assigned Names and Numbers (ICANN). The Internet's 'constitutional convention' had been reduced to two government contractors—each a holder of de facto property rights over critical parts of the Internet's name and number space—negotiating in private. Even the IANA-Network Solutions agreement did not prove to be stable, however. The draft contained two clauses intended to protect Network Solutions against expropriation.^[31] That made the proposal unpopular with many key backers of the dominant coalition, notably gTLD-MoU members and technical organizations outside the United States. IANA quickly backed away from the deal and on September 30 submitted to the Department of Commerce a fifth version of its proposed corporate documents with those clauses removed, and a list of interim board members (see section 8.2.3).

In the meantime, a small band of diehard IFWP-process supporters refused to accept the cancellation of the September 19 ratification meeting. They met on that date in Boston anyway to draft an alternative to the Postel-Sims proposal.^[32] The resulting Boston Working Group (BWG) draft, as it came to be known, made the new corporation accountable to a membership that would elect the nine at-large board members. The group criticized the IANA draft for its 'vague lines of accountability, limited, if any, means for individual participation, . . . a high degree of susceptibility to capture by companies and organizations, and [the absence of] a membership structure.'^[33] Another proposal was submitted under the banner of an alternative root server system called the Open Root Server Confederation (ORSC).^[34] ORSC also proposed a membership corporation, but one composed primarily of organizations. Two other widely circulated documents proposed modifications of their own.^[35] All these proposals claimed support from significant, but by no means dominant, segments of the 'Internet community.'

8.2.3 Captured from the Start

Perhaps the most serious blow to the White Paper's goal of building the new corporation upon a consensual foundation came with the appointment of ICANN's initial board and management. Almost everyone outside the IANA-GIP inner circles expected the initial board and management to be selected through some open, iterative process. Magaziner himself had told an interviewer on September 21 that he had expected 'broad public discussion' of the names of proposed board members.^[36] On October 5, however, Postel and Sims released a complete list of their nine interim board selections and made it clear that it was not subject to modification.

The interim board selections were the product of private negotiations and consultations among core members of the dominant coalition: Postel and Sims, Postel's friends at ISOC and IAB, IBM and other GIP members, the European Commission, and the Australian government. The IBM lobbyist Roger Cochetti, who began to assemble a list of names the first week in August, played a particularly active role and recruited the future board chair Esther Dyson.^[37] The EC's Wilkinson directly nominated and 'insisted upon' certain candidates to Sims in line with a tacit agreement with Magaziner and Burr that Europe would be given three seats on the board.^[38] The Australian government also advanced a name and later pronounced itself satisfied with the results.

During the summer, Postel had stated that he intended to deliberately avoid selecting initial board members who were actively involved in DNS issues or associated with any particular faction. While this was true of most (not all) of the selections, the board members' lack of familiarity with the issues and the absence of any strong ties to involved constituencies meant that the board could not serve as an effective check upon policy directions set by the management.

And it was the core group's total control over the management of the new corporation, not the board selections per se, that proved most significant in the long run. Sims was in control of legal policy. Postel was pre-designated as chief technical officer. At the same time as they selected the initial board, Sims and Postel designated EDUCAUSE's Mike Roberts as president; his ratification by the board October 25 was a mere formality. Roberts was no 'neutral.' He was a charter member of the Internet Society, a supporter of gTLD-MoU, a strong opponent of Network Solutions, and the man many viewed as directly responsible for sabotaging the IFWP. Real operational control of the corporation, therefore, was entirely in the hands of one faction. A neophyte, unpaid board selected by the management itself would be in no position to countermand it.

The dominant role of management became even more problematical when Postel died suddenly of complications from a heart attack, on October 18, 1998. One of the architects of the Internet's name and address spaces, and a man who commanded deep respect among the technical community, Postel had been the new corporation's most valuable asset. His death robbed the organization of its moral center, a good part of its institutional memory, and most of what remained of its legitimacy.

8.2.4 Network Solutions and Amendment 11

Network Solutions was excluded by the dominant coalition; indeed to many coalition members its market power was the focal point of the process. To the technical community it represented an unwelcome and threatening intrusion of commercial and proprietary interests into the core of Internet administration. To prospective entrants it represented a highly skewed

distribution of wealth, which is unlikely to survive most collective action processes. To trademark owners its willingness to profit from an open, first-come/first-served domain name market was a major irritant.

Nevertheless, Network Solutions had significant bargaining power. It knew how to lobby in Washington and had the financial resources to do so. It controlled the gigantic *.com* zone and the authoritative root server.

A refusal by Network Solutions to participate in any new regime might result in the de facto privatization of the root in its hands.

Network Solutions' Cooperative Agreement with the U.S. government, which authorized it to operate the A root server and serve as the registry for the generic top-level domains, was set to expire September 30, 1998, the same date as Magaziner's deadline for forming the new corporation. But the possibility of terminating the contract did not give the U.S. government significant leverage over the company. Network Solutions claimed to have intellectual property rights in the database of *.com*, *.net*, and *.org* registrants; thus, it recognized no obligation to turn over the crucial zone files and registrant data to the U.S. government or to any new contractor when the Cooperative Agreement terminated. It claimed to own the zone files and therefore could continue to resolve names using them, with or without a contract. If its intellectual property claim was not upheld, the company had a fallback position: it would provide the government with a copy of the zone files when its contract expired, but it had a legal right to retain a copy for itself and continue operating a *.com*, *.net*, and *.org* registry on its own.

In either case, simple termination of the agreement would leave NSI in unsupervised or unregulated control of nearly three-fourths of the global domain name market. Most of the world's name servers already pointed at NSI for authoritative information about *.com*, *.net*, *.org*, and *.edu* domains. If Network Solutions continued to operate its own gTLD registries, sheer inertia would ensure that most of the world's name servers would continue to point at them. Network Solutions could even use its leverage over the dominant TLDs to create the critical mass needed to establish a viable alternative root under its own control. This was *real* privatization of DNS, and when confronted with the prospect of it, the U.S. government blanched. The government faced an unappetizing choice between contesting NSI's property claims in court, leading to prolonged uncertainty, or trying to move the root to another contractor to operate in competition with an unreconstructed NSI, risking fragmentation of the Internet.

At this juncture neither side seemed eager for a confrontation. On October 6, 1998, the Commerce Department and Network Solutions came to an agreement that would pave the way for the White Paper transition while leaving the hardest issues to be resolved at a later time. In Amendment 11 to the NSI Cooperative Agreement, Network Solutions agreed to design a shared registry system that would allow competing registrars to market domain name registrations in *.com*, *.net*, and *.org*. The company would separate its registrar (retail) operations from its (wholesale) registry functions into separate divisions. The Commerce Department fixed the price of NSI's wholesale registry at US\$9 per name-year. The U.S. government would get a copy of the second-level domain name registration data controlled by Network Solutions. Moreover, NSI promised to make no changes to the root without written authorization from the U.S. government. Finally, Commerce extracted from Network Solutions a promise to recognize and enter into a contract with the new corporation contemplated by the White Paper.

8.2.5 The Failure of Consensus

The White Paper's attempt to facilitate open, private sector collective action had failed. Magaziner had called for a single proposal representing a broad consensus of the extended 'Internet community.' What the Commerce Department got by September 30 was four or five different proposals with important substantive differences about membership, the nature of the Supporting Organizations, protection of freedom of expression, and the composition of the interim board. Key bargaining parties had not even come to agreement on a common negotiating arena (IFWP vs. IANA). Although U.S. government officials, particularly Magaziner, were genuinely committed to an inclusive process, their decision to remove themselves from the incorporation process (and the tight time line they imposed) made it difficult to rectify the situation. The only card the U.S. government could play was to recognize or refuse to recognize a corporation. And its contract renewal deadlines had put itself in a position where it had to recognize *some* corporation very soon.

A final round of public comments on the multiple proposals put before the Commerce Department confirmed the divisions among the participants and the tenuous support for the ICANN proposal. ^[39] ICANN won praise from predictable sources—the Internet Society, CORE, IAB, the European Commission, and the GIP-led business interests. But only 28 of the 70-odd comments submitted provided an endorsement. The majority of the comments voiced complaints about the composition of the interim board and its method of selection, or favored letting IANA/ICANN lead the incorporation process but demanded membership and accountability provisions similar to the alternative proposals. Nearly 20 of the comments endorsed the BWG or ORSC proposals, or flatly rejected the ICANN proposal. On October 30, Frankel released a detailed 'analysis of the proposed structures for the new corporation' claiming that the ICANN proposal 'flaunts the principles established in the White Paper [and] the open IFWP process' and 'makes a mockery of the trust people put in the process' (Frankel 1998, 3).

After reviewing the comments, the U.S. government announced that it intended to move forward with the ICANN proposal, but Magaziner and Burr made it clear that they agreed with many of the criticisms. They asked Sims and the newly anointed interim board to enter into negotiations with the Boston Working Group and the Open Root Server Confederation. ^[40] These negotiations, carried out in late October, resulted in a significant concession: the bylaws were amended to make it clear that the board had an 'unconditional mandate' to create a membership structure that would directly elect the nine at-large

directors. ^[41] ICANN agreed to establish an advisory committee on membership to pave the way for the creation of a global membership structure. It also was required to improve the transparency of its operations.

The Commerce Department entered into a memorandum of understanding with ICANN on November 25, 1998. ICANN agreed to 'jointly design, develop, and test the mechanisms, methods and procedures' needed to transfer management of the root to a private sector, notforprofit entity. ^[42] A few months later, ICANN entered into an agreement with the University of Southern California, the institutional home of the Information Sciences Institute (ISI), to take over the IANA functions. The Commerce Department officially recognized ICANN as the White Paper's private sector, not-for-profit entity on February 26, 1999.

Only a few months later the new chairman of the board, Esther Dyson, was able to declare without a trace of irony, 'ICANN is nothing more than the reflection of [Internet] community consensus.' ^[43]

^[22] John Sopko, Chief Counsel for Special Matters, U.S. Commerce Department, to Rep. Thomas J. Bliley, November 5, 1998.

^[23] Rutkowski's June 9, 1998 email to Jon Postel, Vint Cerf, Dave Farber, Scott Bradner, and John Gilmore, entitled 'Incorporation Workshop,' said in part, 'It's critical now to really bring everyone together to construct a corporation or trust with the right attributes-that provides for diversity, balance, safeguards, and meets the interests and expectations of everyone. This workshop happened because a lot of people were talking with a lot of other people about how to proceed if the government wasn't going to itself form a corporation, and what form of legal creature should be brought into existence.'

^[24] ISP/C news release, June 18, 1998.

^[25] The IFWP steering committee included representatives of the following organizations: Catalanian Foundation for Research (. ES), Image Online Design (. US), Information Technology Association of America (. US), Canadian Association of Internet Providers (. CA), Association for Interactive Media (. US), Camara Argentina de Bases de Datos y Servicios en Linea (. AR), Association Usarias de Internet (. ES), Open Root Server Confederation (. US), EuroISP Association-UK, EuroISP Association-Germany, Council of Internet Registrars (. CH), ISOC Australia, Mexican TLD, Domain Name Rights Coalition (. US), Harvard Berkman Center (. US), ISP/C (. US), DENIC (. DE), Internet Society (. US), Commercial Internet eXchange (. US), European Telecommunications Standards Institute (. EU), Asia Pacific Internet Association (. AP), EDUCAUSE (. US), ISOC-Geneva (. CH), Asia Pacific Networking Group (. SG), International Chamber of Commerce (. UK).

^[26] Einar Stefferud raised procedural and substantive objections to the plenary's actions. See Stefferud to IETF list, September 2, 1998, 'Tamar's IETF appearance.'

^[27] Stefferud's report, corroborated by others present, notes that he stood up and asked the plenary attendees, 'Who has read the proposals? Only about one-quarter of the attendees raised their hands.'

^[28] Email, Lawrence Lessig to Michael Sadow, September 6, 2000; on file with author.

^[29] A widely publicized, caustic email from Mike Roberts announcing his refusal to participate in the ratification meeting signaled the demise of the final meeting proposals. Mike Roberts to IFWP-discuss list, August 28, 1998, 'Ratification- the IFWP Emperor Has No Clothes.'

^[30] Paul Festa, 'Raising Funds for New Names Body,' CNET News, September 9, 1998.

^[31] The first subclause stated that the new corporation must recognize any agreements between the U.S. government and IANA or Network Solutions. The second subclause stated that the corporation should not knowingly destroy any contractual or property right of a particular party.

^[32] The BWG members included Karl Auerbach, Internet technologist since 1974, IETF participant since the mid-1980s, California attorney, and chief technical officer of InterWorking Labs; Peter Dengate Thrush, patent attorney, solicitor, and barrister, counsel to ISOCNZ (New Zealand) and its subsidiary, the NZ registry, Domainz; David Schutt, chief information systems manager for a manufacturing company; Patrick O'Brien, CEO of Domainz, the NZ registry; Eric Weisberg, principal and general counsel for a rural Texas ISP, Internet Texoma; Diane Cabell, of the law firm Fausett, Gaeta & Lund; Jorge Contreras, Hale & Dorr (host, representing the Berkman Center for Internet and Society at Harvard Law School). Most had purchased nonrefundable airline tickets to Boston.

^[33] Letter from the Boston Working Group to Ira Magaziner, senior advisor to the President for policy development, September 28, 1998.

^[34] The Open Root Server Confederation was formed in July 1997 by Richard Sexton, Einar Stefferud, and Brian Reid. It was incorporated in Delaware in the summer of 1998.

^[35] The Electronic Frontier Foundation urged IANA to include protections for freedom of expression in the articles, and a proposal submitted by the European ISP Association proposed a structure similar to ORSC's.

^[36] 'I am assuming that by midweek at the latest, there will be some names of board members emerging. I am assuming this because we will need to have some broad public discussion of those names before October first.' Gordon Cook, interview with Ira Magaziner, September 21, 1998, posted to Domain Policy list, September 22, 1998.

^[37]John Sopko, Chief Counsel for Special Matters, U.S. Commerce Department, to Rep. Thomas J. Bliley, November 5, 1998.

^[38]Ibid.

^[39]Comments responding to the ICANN incorporation proposal are still posted at <<http://www.ntia.doc.gov/ntiahome/domainname/proposals/comments/comments.html>.

^[40]'Overall, the submissions we received supported moving forward with the ICANN structure. We note, however, that the public comments received on the ICANN submission reflect significant concerns about substantive and operational aspects of ICANN. The submissions of the Boston Working Group and the Open Root Server Confederation, among others, articulate specific concerns, many of which we share. As you refine your proposal, we urge you to consult with these groups and others who commented critically on your proposal to try to broaden the consensus.' Burr letter to ISI, October 20, 1998.

^[41]Letter of Esther Dyson, interim board chair, to J. Beckwith Burr, Department of Commerce, November 6, 1998.

^[42]Memorandum of Understanding, Department of Commerce and ICANN, November 28, 1998.

^[43]Letter from Esther Dyson, ICANN, to J. Beckwith Burr, Department of Commerce, July 19, 1999.

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9.3 The Assimilation of Network Solutions

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ICANN's registrar accreditation contracts were designed to put it in control of the terms and conditions offered to all domain name registrants in the generic TLDs. It was also evident that key members of the dominant coalition intended to extend the regime to the entire name space, including the country codes, as soon as practicable.^[14] By the middle of 1999, however, there was still a gaping hole in the Commerce Department's nascent regime: Network Solutions. Network Solutions controlled almost all of the retail registration business under *.com* but was not itself an accredited registrar. It could offer domain name registrations to the public outside of the accreditation regime and also subcontract with other firms to resell access to its registry. Its registry contract was still with the Commerce Department, not with ICANN.

ICANN and the Commerce Department hoped that Network Solutions would recognize ICANN's authority to step into the shoes of the Commerce Department and establish the terms and conditions governing its operation of the *.com*, *.net*, and *.org* registry. After that, it was expected to sign one of ICANN's registrar accreditation contracts and become 'just another registrar.' Network Solutions, however, resisted recognition of ICANN. To do so would be to cede control over the asset upon which its entire business had been built; moreover, as soon as it did, most of its bargaining power over the transition process would disappear. Since ICANN at this point consisted of nothing more than nine self-appointed people, many of whom had a long history of hostility to NSI, it was only rational for the company to strenuously resist being incorporated into the regime. During the summer of 1999, ICANN's board and management reinforced these fears by stripping NSI of most of its voting rights in the DNSO and refusing to recognize constituencies that might dilute the control of the dominant coalition over the DNSO's policymaking council.

ICANN itself had no bargaining power in this struggle. The real battle was between Network Solutions and the Commerce Department. The basis of contention was the same as in October 1998: whether upon termination of the Cooperative Agreement, Network Solutions could continue to register names under the gTLDs. The absence of an agreement with ICANN did no harm to NSI; the company could continue to register names in *.com*, *.net*, and *.org* and possibly even set up an alternative root server system, completely out of the government's control. To enhance the company's bargaining power, NSI lobbyists went on the offensive against ICANN in the U.S. Congress. ICANN critics hammered away at the US\$1 per name 'tax' and began to embarrass the Clinton administration politically. Rep. Bliley of Virginia held hearings on the theme 'Is ICANN out of control?'^[15] The registrar testbed period, which could not be brought to a close until Network Solutions officially recognized ICANN, was extended several times. With no source of financial support, ICANN went deeply into debt. At that time the core of ICANN's support was clearly revealed. MCI's Vinton Cerf and IBM's John Patrick frantically appealed to the industry for loans and donations. Patrick delivered US\$100,000 from IBM, and Cerf delivered a loan of US\$500,000 from MCI.^[16] ICANN's management leveraged connections in the White House, Congress, and the Federal Trade Commission to bring Network Solutions to heel.^[17]

Finally, in late September 1999, a series of agreements were made between the Commerce Department, Network Solutions, and ICANN that represented a settlement acceptable to the three parties.^[18] These agreements are the fundamental bargain upon which the new regime was founded, and their implementation starting in November 1999 was the real beginning of the new system's operation. In essence, Network Solutions agreed to enter into a registry contract and a registrar accreditation contract with ICANN and to provide the new governance regime with US\$1.5 million in financial support. In exchange, it got to extend its property right over the legacy gTLD registry and got the Department of Commerce to assume various kinds of authority over ICANN. The main points of the agreements are as follows.

Network Solutions recognized ICANN and agreed to operate the *.com*, *.net*, and *.org* registry in accordance with the provisions of a 'registry agreement' with ICANN. ICANN agreed to license NSI as the generic TLD registry for four years. If NSI fully divested its registry from the registrar functions within 18 months of the agreement, the registry contract would be extended for another four years. This gave Network Solutions an extended property right over the coveted *.com* registry, but at the price of divesting its registrar business. As NSI was a for-profit entity, this solution ended the debate, which had been inaugurated by the gTLD-MoU, over whether all registries should be nonprofit.

The new contracts regulated Network Solutions' rates more tightly. The wholesale registry price was reduced to US\$6 per name-year from US\$9 per name-year beginning January 15, 2000. NSI's retail registrar prices were deregulated (the US\$35 per name-year price had been fixed by its Cooperative Agreement). NSI promised to prepay registrar fees to ICANN of US\$1.25 million.

To lock the new regime into place, NSI agreed to accept domain name registrations only from ICANN-accredited registrars and not to deploy an alternative DNS root server system. It also continued to operate the authoritative root server system in accordance with the directions of the Commerce Department.

The new agreements also clarified ICANN's obligations. ICANN was required to comply with specific procedural limitations on the exercise of its authority. Many of its decisions were required to gain a two-thirds majority of the supporting organization councils. ICANN's policy authority over the Network Solutions registry can be terminated if it does not succeed in bringing other registries into its centralized contractual regime and Network Solutions is competitively disadvantaged as a result. This provision, which was directed at country code registries and particularly the quasi-generics competing with NSI, made it clear that the ICANN regime's scope must become global and uniform. The fees ICANN imposes on registrars must be 'equitably apportioned' and approved by the registrars that pay two-thirds of the fees, a provision that gave Network Solutions considerable leverage over ICANN's taxing policies. The amount of registrar fees NSI must pay to ICANN was capped at US\$2 million.

A revision of the registry agreement in 2001 further strengthened Network Solutions' property right over the *.com* domain and ICANN's status as the regulator of the name space. Network Solutions (which had been sold to Verisign, Inc.) agreed to pay more fees to ICANN and give up control of the *.org* registry (which accounted for 8 percent of its registrations) in exchange for a 'presumptive renewal right' over the *.com* registry and an elimination of the requirement to divest its registrar business.^[19]

^[14]WIPO actively promoted adoption of the UDRP among ccTLD administrators. ICANN attempted to tax the ccTLDs, and the Commerce Department, in GAC meetings, urged that the 'quasi-generic' ccTLDs be regulated like Network Solutions. <<http://www.dns0.org/dns0/notes/20000417.NCwgb-report.html>>.

^[15]U.S. Congress, House of Representatives, Committee on Commerce, Subcommittee on Oversight and Investigations, July 22, 1999, Thomas Bliley (R., Virginia), Chairman.

^[16]In late August 1999, MCI loaned ICANN US\$500,000 and Cisco Systems loaned it US\$150,000. See J. Niccolai, 'ICANN Survives on Corporate Dole,' *The Industry Standard*, August 20, 1999, <<http://thestandard.com/article/0,1902,6037,00.html>>.

^[17]The July 22, 1999, hearings were a disaster for Network Solutions, as Democratic representatives spotlighted its monopoly rather than ICANN's authority. Leading up to it, ICANN officers initiated meetings with White House aide Thomas Kalil, seeking help raising funds, and FTC antitrust probes against NSI were initiated.

^[18]'Approved Agreements among ICANN, the U.S. Department of Commerce, and Network Solutions, Inc.,' November 10, 1999, <<http://www.icann.org/nsi/nsi-agreements.htm>>.

^[19]Revised Verisign registry agreements, April 16, 2001.

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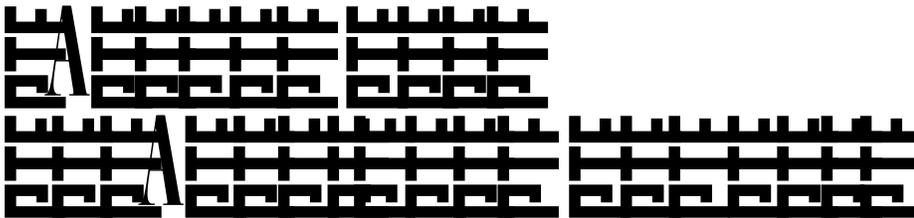
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EXHIBIT JZ-9



WIRED NEWS REPORT SECURITY 02.05.98 09:53 AM



JON POSTEL, THE University of Southern California computer scientist, who might have the best claim to the title Internet Main Man, is an individual whose labors are unknown to most Net users, let alone the world at large.

For the time being, that's all changed.

As the result of a technical test, the head of the Internet Assigned Numbers Authority ran last week, Postel is finding his name in places like *The Wall Street Journal*, *The Washington Post*, and the Associated Press. His virtually unnoticed experiment - in which he has redirected

half of the Net's dozen root servers from their single source of official address data at Network Solutions Inc. to a system he controls - has made him the source of comment by no less a personage than Clinton cyberguru Ira Magaziner.

Postel told the *Post* last week that he requested that administrators redirect the six root servers for their daily update of current Net address information. The purpose, he told the paper and federal officials, was to see what sort of problems might arise in such a switch.

The issue is relevant because Network Solutions, which has a US government contract to handle the domain-name system, is losing its exclusive hold on that responsibility. Under a system initiated last year by Postel and other Internet administrators worldwide - as well as under a plan proposed by the Clinton administration last week - registry responsibilities will be open to competition and likely split among many companies or agencies.

Postel's action shows that, despite the Net's rapid spread and increasing complexity, its operation is still largely dependent on the work of a few individuals. Postel told the *Post* that last week's redirection was accomplished with just a simple message from him.

Postel gave no prior notification that the test would take place, a fact that drew criticism.

"It's caused a good deal of uncertainty and perceived instability in the system," Chris Clough, a spokesperson for Network Solutions, told the Associated Press. "It's a concern about who can authorize changes over the infrastructure and traffic patterns of the Internet."

Magazine told the AP that he didn't care for the timing of the test, coming as it did immediately after release of the administration's domain proposal.

"We thought the timing was a bit dicey," Magaziner said. "He [Postel] said, 'Yeah, that wasn't the right time to do it.' ... I'd give him a bit of slack."

As of today, the six redirected root servers remain redirected to the IANA database.

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EXHIBIT JZ-10

The internet

A peace of sorts

No one controls the internet, but many are determined to try

Print edition | Business

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“EVERY civilisation starts as a theocracy and ends as a democracy,” wrote Victor Hugo, alluding to the impact of the printing press on the Catholic Church. So too the internet. This week, after years of vitriolic debate, the first steps towards nudging aside America’s unilateral role in managing the internet’s core infrastructure took shape.

From 1968 to 1998 the network’s underlying protocols and addressing system were co-ordinated largely by an engineer named Jon Postel (whom techies referred to as “God”), acting under the aegis of America’s Defence Department, which paid for the net’s creation. Since 1998, the task has fallen to an international, self-regulating industry group called the Internet Corporation for Assigned Names and Numbers (ICANN), operating under the benign oversight of the American government. It manages things such as .com addresses and routing numbers that machines use online.

But as other countries began to appreciate the importance of the internet, ICANN’s private-sector nature was deemed unsatisfactory; governments wanted more control. At the United Nations’ World Summit on the Information Society in Tunis this week, countries agreed on the creation of an Internet Governance Forum to begin in 2006, which some nations plan to use to shift the oversight of the internet to a multilateral footing. Although others from industry and civil-society groups can participate, most governments expect that they will be the ones in charge.

Paradoxically, American officials hailed the outcome as a victory. In most respects, they are right. America beat back calls to replace ICANN entirely; it won backing for a toothless talking-shop that would not be limited to governments, and the talks will range over a jumble of issues, from cyber-security to spam. “There is no change

in the technical aspects of the internet," gushed David Gross, who led America's delegation. [Topics](#) [Current edition](#) [More](#)

Yet the agreement to defer the debate to another venue simply underscores that the real fight is only just starting. In terms of mainstream policy, the internet presents many concerns that require more governmental input than can be achieved with ICANN (which tries to do only technical stuff), yet have no natural home among existing international institutions. As for ICANN, countries object so strongly to America's unilateral power that the nation has been left nearly isolated.

Other countries have considered creating a supplementary addressing system to work alongside ICANN-sanctioned domains like .com or .uk (for Britain). This would permit other language scripts such as Chinese or Arabic to be used as web addresses. It would require a separate naming system alongside the existing one, which could cause complications, although a bit of competition might be good.

However, sharing the management of the internet comes at a price. Government influence over technology invariably slows down innovation, favours powerful players, increases costs and encumbers engineering with political squabbles. A desire to avoid these burdens is the reason America created ICANN. Nevertheless, most other countries remain unpersuaded, and arrived in Tunis to assert more governmental control, if only to minimise America's dominant role.

Achieving this may not be as easy as they expect, even if they eventually get their way. The internet is comprised of thousands of privately owned networks that agree to interconnect, and informally adhere to the late Dr Postel's (and now ICANN's) addressing system. America is able to maintain its formal power over the addresses through ICANN largely because it does not exercise much in reality.

Yet whoever administers the underlying infrastructure can subtly impose their values. As an American creation, the internet embodies decentralisation and openness on a technical level that has translated into free expression and low-cost access in both political and economic spheres. If the system were placed on an intergovernmental footing, such characteristics could well be jeopardised. So America is right to try to retain formal control if it can. Its largely hands-off approach has worked remarkably well.



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Heather N. Mewes

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MEMORANDUM OF UNDERSTANDING ON THE GENERIC TOP-LEVEL DOMAIN NAME SPACE OF THE INTERNET DOMAIN NAME SYSTEM

By Heather N. Mewes

As the Internet expands in size and commercial importance,¹ domain names promise to play a central role in the development of this sprawling network of networks. Whole businesses exist solely on the World Wide Web as virtual storefronts for financial services, books, software, and many other products.² Without a memorable domain name, especially one that incorporates a well-known trademark,³ these businesses would be out of business. Unique and colorful domain names capture the well-known maxim that the three most important factors to the success of any business are location, location, and location.

This comment addresses one recent proposal to enhance and expand the Domain Name System: the Memorandum of Understanding on the Generic Top-Level Domain Name Space of the Internet Domain Name System (gTLD-MoU).⁴ The first section briefly summarizes the status of

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1. The Internet today attracts some 35,000,000 users and 190,000 businesses. See Craig W. Harding, *Selected Issues in Electronic Commerce: New Technologies and Legal Paradigms*, 491 PLI/PAT 7, 9 (1997). By the year 2000 it is estimated that over \$500 billion in transactions will take place over networks. See *id.* For statistics on Internet and Web growth, see generally *Nielsen/CommerceNet Demographic Studies* (visited Jan. 27, 1998) <<http://www.commerce.net/nielsen/index.html>> (finding 23% of US/Canadian population uses the Internet and 15% have made purchases on-line); *GVU Center's WWW User Surveys* (visited Jan. 27, 1998) <http://www.cc.gatech.edu/gvu/user_surveys/> (surveying Web user demographics); *The Fourth WWW Consumer Survey* (visited Jan. 27, 1998) <<http://www-personal.umich.edu/~sgupta/hermes/survey4/>> (examining Web user attitudes toward commerce on the Internet).

2. See, e.g., *Amazon.com* (visited Jan. 27, 1998) <<http://www.amazon.com/>> (selling books); *E*Trade* (visited Jan. 27, 1998) <<http://www.etrade.com/>> (selling financial services); *Software.net* (visited Jan. 27, 1998) <<http://www.software.net/>> (selling software); *Virtual Vineyards* (visited Jan. 27, 1998) <<http://www.virtualvin.com/>> (selling wine).

3. See, e.g., *MTV Networks v. Curry*, 867 F. Supp. 202, 203 n.2 (S.D.N.Y. 1994) (explaining that a "domain name mirroring a corporate name may be a valuable corporate asset, as it facilitates communication with a customer base").

4. The Memorandum of Understanding on the Generic Top-Level Domain Name Space of the Internet Domain Name System (gTLD-MoU), as well as current information

the current Domain Name System. The second section identifies the movers behind the gTLD-MoU and their motivations. It also describes the provisions of the gTLD-MoU. The third section analyzes these provisions, paying particular attention to issues of Internet governance, trademark law, and competition. Finally, the fourth section offers some predictions concerning the ultimate fate of the gTLD-MoU.

I. WHAT'S IN A DOMAIN NAME?

Domain names⁵ are the addresses of virtual homes on the Internet. Examples include "inta.org" and "ibm.com." Domain names correspond to more forgettable Internet Protocol (IP) numbers, such as 169.229.97.112. Because IP numbers are difficult to remember, Internet users substitute unique domain names that are invisibly translated by Domain Name System servers,⁶ the domain name is "merely a human-friendly pseudonym for the computer's real ID."⁷

The ".org" or ".com" portion of the domain name is the top level domain (TLD). In the examples cited, "inta.org" refers to an organizational entity, the International Trademark Association and "ibm.com" refers to a commercial entity, International Business Machines. The identifier, "inta" and "ibm", is the second level domain (SLD). Both .com and .org are considered generic TLDs (gTLDs); country code TLDs like .fr (France) and

related to its implementation, can be found at the gTLD-MoU Web site at <<http://www.gtld-mou.org>>.

5. A domain name is defined as:

The unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. A given machine may have more than one Domain Name but a given Domain Name points to only one machine.

ILC Glossary of Internet Terms (last modified July 9, 1997) <<http://www.matisse.net/files/glossary.html>>.

6. A server is a "computer, or a software package, that provides a specific kind of service to *client* software running on other computers. The term can refer to a particular piece of software, such as a [Web] server, or to the machine on which the software is running" *Id.*

7. Neil Randall, *How DNS Servers Work*, PC MAG., Sept. 24, 1996, at 217. The Internet Assigned Numbers Authority (IANA) coordinates IP address assignments under contract with the Defense Department. See *Hearing on Internet Domain Names (Part 1) Before the Subcomm. on Basic Research of the House Comm. on Science*, 105th Cong. (Sept. 25, 1997) [hereinafter *Hearing (Part 1)*] (statement of Jonathan B. Postel, Director, Internet Assigned Numbers Authority) (visited Oct. 5, 1997) <http://www.house.gov/science/postel_9-25.html>. See also *Internet Assigned Numbers Authority* (last modified Feb. 20, 1996) <<http://www.isi.edu/div7/iana/>>.

.us (United States), are non-generic because they refer to specific geographic areas.⁸

The Internet Network Information Center⁹ (InterNIC) currently assigns domain names for the .com (commercial), .edu (educational), .gov (governmental), .net (network), and .org (organizational) TLDs. Network Solutions, Inc. (NSI) administers InterNIC's domain name registration services under an exclusive agreement with the National Science Foundation. This cooperative agreement took effect in January 1993, but was modified in September 1995 in order to allow NSI to charge users for its services.¹⁰

II. A MODEST PROPOSAL: THE GTLD-MOU

A. The Players

Members of the Internet community, under the auspices of the Internet Society¹¹ (ISOC) and the Internet Assigned Numbers Authority¹² (IANA),

8. Historically, the .us TLD has been underused. United States governmental and educational entities use the .gov and .edu TLDs. United States commercial entities typically use the generic .com TLD. This has created enormous demand for .com domain names and has precipitated many recent trademark disputes. See World Intellectual Property Organization, *Meeting of Consultants on Trademarks and Internet Domain Names, First Session* (last modified Dec. 17, 1996) <<http://www.wipo.org/eng/internet/domains/tdnmcil.htm>>; see also *Network Solutions Registers Record Number of Internet Domain Names in 1997* (last modified Jan. 7, 1998) <http://www.netsol.com/news/pr_19980107.html> (reporting that Network Solutions, Inc. registered 960,000 new Internet domain names in 1997 and that nearly 90% were in the .com name space).

9. Established in 1993 as a collaborative project among AT&T, General Atomics, and Network Solutions, Inc., InterNIC provides directory and registration services for the Internet. It is supported by cooperative agreements with the National Science Foundation, a US governmental agency, and can be found at <<http://www.internic.net>>. See *About the InterNIC* (visited Jan. 27, 1998) <<http://www.internic.net/ds/about.html>>.

10. See *NSF Cooperative Agreement No. NCR-9218742* (last modified Dec. 10, 1997) <<http://rs.internic.net/nsf/agreement/>> (expiring September 30, 1998). Currently, NSI charges a registration fee of \$100 for a new domain name and an annual maintenance fee of \$50 for all registered domain names. See *Fee for Registration of Domain Names Policy* (last modified March 26, 1996) <<http://www.rs.internic.net/domain-info/fee-policy.html>>. For a summary of the domain name registration process itself, see *Registration Process Overview* (last modified Jan. 20, 1998) <<http://rs.internic.net/domain-info/domflow.html>>.

11. "The Internet Society is a non-governmental International organization for global cooperation and coordination for the Internet and its internetworking technologies and applications." *All About the Internet Society* (visited Jan. 27, 1998) <<http://www.isoc.org/isoc/>>. This organization came into existence in January 1992 and is made up of a diverse membership, including interested individuals, corporations, non-

created an International Ad-Hoc Committee¹³ (IAHC) to investigate proposals for an enhanced Domain Name System. In turn, the IAHC consulted with the Internet community through conferences and electronic mailing lists.¹⁴ The IAHC's efforts cumulated in the gTLD-MoU, signed by ISOC and IANA in May 1997.

B. Their Motivations

1. *Internationalizing the Internet*

Though the Internet was initially developed by the United States government,¹⁵ it has since become the backbone for an international communication network that gives little significance to national boundaries. The IAHC charter identifies the Domain Name System as an "international resource" and mandates that the IAHC "will at all times operate with that perspective."¹⁶ The gTLD-MoU reflects this thinking; it declares the Internet TLD name space a "public resource ... subject to the public trust" and provides for "global distribution of [domain name] registrars."¹⁷

profit organizations, and government agencies. See *All About the Internet Society: Frequently Asked Questions* (visited Jan. 27, 1998) <<http://www.isoc.org/isoc/general/>>.

12. "The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols." Jonathan B. Postel, *IANA-Overview* (last modified Oct. 11, 1996) <<http://www.isi.edu/div7/iana/overview.html>>. Chartered by the Internet Society and the Federal Network Council, the IANA is operated by the Information Sciences Institute of the University of Southern California. See *id.*

13. The IAHC, now dissolved, included members named by ISOC, IANA, the Internet Architecture Board, the Federal Networking Council, the International Telecommunication Union, the International Trademark Association, and the World Intellectual Property Organization. See *IAHC Home* (last modified May 26, 1997) <<http://www.iahc.org/>>.

14. See generally *IAHC Mailing List and Related Lists* (last modified Mar. 29, 1997) <<http://www.iahc.org/mail-lists.html>> (cataloguing IAHC mailing lists and other domain name-related, electronic mailing lists); *gTLD-MoU Mailing Lists* (last modified Aug. 25, 1997) <<http://www.gtld-mou.org/docs/maillist.htm>> (providing access to current gTLD-MoU discussion and announcement mailing lists and archives); WIPO, *Trademarks and Internet Domain Names* (visited Jan. 27, 1998) <<http://www.wipo.org/eng/internet/domains/index.htm>> (chronicling WIPO consultative meetings on trademarks and Internet domain names).

15. The Defense Department funded the creation and development of the Internet through the (Defense) Advanced Research Projects Administration. See Barry M. Leiner et al., *A Brief History of the Internet: Origins of the Internet* (last modified Feb. 20, 1997) <<http://www.isoc.org/internet-history/brief.html>>.

16. *IAHC: Description of Working Group* [hereinafter *IAHC, Charter*] (last modified Nov. 20, 1996) <<http://www.iahc.org/iahc-charter.html>>.

17. *gTLD-MoU*, *supra* note 4, at § 2(a), § 2(e).

2. *Quieting the domain name wars*

As the Internet, and more particularly, the World Wide Web, has grown both in size and commercial importance,¹⁸ domain name disputes have risen to the forefront, usually in the guise of suits for trademark infringement and dilution.¹⁹ The borderless character of the Internet has also created numerous jurisdictional concerns.²⁰ The IAHC's charter recognizes that the "recent explosive commercialization of the Internet has produced a requirement for enhanced assignment procedures."²¹ It also notes that a "complicating factor is that the human-friendly quality of Domain Name strings has also made them commercially valuable."²² By increasing the number of domain names available, the gTLD-MoU seeks to limit the number of disputes.

3. *Breaking the NSI monopoly*

NSI's monopoly on the assignment of the .com, .net and .org TLDs and its institution of registration fees in 1995²³ inspired numerous proposals for the expansion of TLDs, including the gTLD-MoU.²⁴

C. An Overview of the gTLD-MoU

The gTLD-MoU declares that "current and future Internet name space stakeholders can benefit most from a self-regulatory and market-oriented approach to Internet domain name registration services."²⁵ This self-regulatory framework consists of a gTLD depository, a Policy Advisory Board (PAB), a Policy Oversight Committee (POC), a Council of Registrars (CORE), and Administrative Domain Name Challenge Panels (ACPs).

18. *See supra* note 2.

19. *See generally* Ughetta Manzone, *Panavision International, L.P. v. Toeppen*, 13 BERKELEY TECH. L.J. 249 (1998) (analyzing domain name disputes and trademark dilution law in light of *Panavision Int'l, L.P. v. Toeppen*, 945 F. Supp. 1296 (C.D. Cal. 1996)).

20. *See generally* Colleen Reilly, *Bensusan v. King*, 13 BERKELEY TECH. L.J. 271 (1998) (analyzing personal jurisdiction on the Internet in light of *Bensusan Restaurant Corp. v. King*, 126 F.3d 25 (2d. Cir. 1997)); Anindita Dutta, *Zippo Manufacturing Co. v. Zippo Dot Com, Inc.*, 13 BERKELEY TECH. L.J. 289 (1998) (analyzing personal jurisdiction on the Internet in light of *Zippo Mfg. Co. v. Zippo Dot Com, Inc.*, 952 F. Supp. 1119 (W.D. Pa. 1997)).

21. *IAHC, Charter, supra* note 16.

22. *Id.*

23. *See supra* note 9.

24. *See Hearing (Part I), supra* note 7.

25. *gTLD-MoU, supra* note 4, at § 2(d).

*Depository.*²⁶ The depository for the gTLD-MoU is the Secretary-General of the International Telecommunications Union (ITU), a specialized agency of the United Nations. The ITU is committed to circulating the gTLD-MoU for signature, to maintaining a list of Signatories,²⁷ and to cooperating in the gTLD-MoU's implementation.

*Policy Advisory Board.*²⁸ Signatories of the gTLD-MoU may choose to participate as members of the PAB. Decision-making is by "rough consensus."²⁹ However, the PAB's role is solely advisory.

*Policy Oversight Committee.*³⁰ The POC is the central policy-making body for this regulatory framework. Its membership is restricted,³¹ and its decisions require a supermajority. The role of the POC is to provide oversight for the CORE and its Registrars, principally through the CORE-MoU.³² It is required to consult with the PAB and CORE. The principal powers of the POC include: (1) the power to change the number of gTLDs, and to approve names of new gTLDs; (2) the power to change the number of Registrars, to establish new terms and conditions for applications by entities desiring to become Registrars and to remove Registrars who do not operate consistently with the gTLD-MoU and CORE-MoU; and (3) the power to recommend amendments to the gTLD-MoU.³³

*Council of Registrars.*³⁴ CORE is composed of recognized Registrars,³⁵ and has been established in Switzerland. The principal power of CORE-gTLD Registrars is to assign SLDs in any gTLD created under the provisions of the gTLD-MoU or the CORE-MoU "on a fair-use, first-

26. See *id.* § 4.

27. For a current list of signatories to the gTLD-MoU, see *International Telecommunications Union: List of Signatories of the Generic Top Level Domain Memorandum of Understanding* (last modified Jan. 19, 1998) <<http://www3.itu.int/net-itu/gtld-mou/signat.htm>>.

28. See *gTLD-MoU*, *supra* note 4, at § 5.

29. *Id.* § 5(c).

30. See *id.* § 6.

31. Appointments are reserved to various organizations: IANA (2), ISOC (2), Depository (1), Internet Architecture Board (2), CORE (2), ITU (1), WIPO (1), and ITNA (1). See *gTLD-MoU*, *supra* note 4, at § 6(g).

32. See *gTLD-MoU*, *supra* note 4, at § 6(a); see also *CORE-MoU* (visited Jan. 27, 1998) <<http://www.gtld-mou.org/docs/core-mou.htm>>.

33. See *gTLD-MoU*, *supra* note 4, at § 6(j).

34. See *id.* § 7.

35. For a list of current Registrars, see *gTLD Registrar Selection Results* (visited Jan. 27, 1998) <<http://www.gtld-mou.org/docs/reg-results.html>> (listing 88 Registrars from around the world). A Registrar is "authorized to enter and modify the Second Level Domain (SLD) data maintained by a Registry, in response to requests by entities seeking to be assigned a SLD." *gTLD-MoU*, *supra* note 4, at § 1(f).

come, first-served basis.”³⁶ Registrars are required to sign the CORE-MoU.³⁷

*Administrative Domain Name Challenge Panels.*³⁸ ACPs will be established to administer a policy such that:

a second-level domain name in any of the CORE-gTLDs which is identical or closely similar to an alphanumeric string that, for the purposes of this policy, is deemed to be internationally known, and for which demonstrable intellectual property rights exist, may be held or used only by, or with the authorization of, the owner of such demonstrable intellectual property rights.³⁹

Registrars will be bound by the decisions of the ACPs. The procedures for creating and bringing challenges before the panels shall be administered by WIPO’s Arbitration and Mediation Center. However, it is specifically noted that ACP decision will not “inhibit, affect or prevent” the exercise of national or regional courts.⁴⁰

The gTLD-MoU calls for the POC to create an additional set of gTLDs once the gTLD-MoU enters into force. In a review of new gTLD’s, the POC selected seven new gTLDs:⁴¹

- .firm for businesses or firms
- .shop for businesses offering goods to purchase
- .web for entities emphasizing activities related to the Web⁴²
- .arts for entities emphasizing cultural and entertainment activities
- .rec for entities emphasizing recreation/entertainment activities
- .info for entities providing information services

36. *gTLD-MoU*, *supra* note 4 at § 7(e).

37. *See id.* § 7(c).

38. *See id.* § 8.

39. *Id.* § 2(f); *see also id.* § 8(a).

40. *Id.* § 8(c).

41. *See Notice 97-02: Review of new generic Top Level Domains* (last modified Jan. 12, 1998) <<http://www.gtld-mou.org/docs/rfc-results.htm#97-02>>.

42. The .web gTLD has already been the subject of suit. Image Online Design, Inc. sued the IANA and IAHC for breach of contract, unfair competition, and antitrust violations. It claimed an interest in the .web TLD, since it had already begun registration of .web SLDs allegedly with the consent of the IANA. *See Image Online Design, Inc. v. Internet Assigned Number Authority*, No. CV 080380 (CA Super. Ct., San Luis Obispo Cty.) (TRO denied, May 1, 1997); *CA Judge Refuses to Block Implementation of Domain Name Overhaul*, 1997 Andrews Computer & Online Indus. Litig. Rep. 24101 (May 6, 1997).

.nom for those wishing individual or personal nomenclature.

The gTLD-MoU took effect when ISOC and IANA signed the MoU on May 1, 1997.⁴³ All amendments to the gTLD-MoU must be initiated by the POC and are subject to signature by ISOC and IANA.⁴⁴

III. DISCUSSION

A. By Whose Authority?

As the Internet grows in commercial importance, the question of who will govern and maintain this rapidly developing network of networks has become increasingly vital. The drafters of the gTLD-MoU adopted a method of decision-making long-used by ISOC and the Internet Engineering Task Force to develop Internet technical standards.⁴⁵ However, where vital commercial and policy interests are implicated, as here, there are serious concerns that this ad-hoc, "rough" consensus approach is inadequate. One detractor commented, "[gTLD-MoU supporters] clearly indicated that governance is theirs to simply claim and acquire on their own initiative—exclusively and in perpetuity."⁴⁶ Yet ISOC, IAHC, and the current POC are largely unaccountable. With limited membership and no "official" mandate, their seizure of this supposedly "public resource" called the Domain Name System is suspect.

The diverse membership of the IAHC was no doubt intended to address this criticism and incorporate countervailing interests so as to arrive at a legitimate and workable solution. However, the failure to include national governments in the decision-making process, and the participation of United Nations specialized agencies seems rather to reinforce the concern that this is a self-appointed, unaccountable, and illegitimate decision-making body. The IAHC does take into account the growing international culture of the Internet, but it does not take into account the heightened interest of national governments. This can be seen by the European Union's and the United States' reaction to the proposal—both expressed serious

43. See *Domain Name Plan Inked, But Questions Remain*, 3 No. 7 *Multimedia Strategist* 1 (May 1997) (57 organizations sign gTLD-MoU).

44. *gTLD-MoU*, *supra* note 4, at § 11.

45. See D. Crocker, *Making Standards the IETF Way* (visited Jan. 27, 1998) <<http://www.isoc.org/internet/standards/papers/crocker-on-standards.shtml>> for a detailed explanation of the Internet Engineering Task Force's standards-making process.

46. *Hearing on Internet Domain Names (Part 2) Before the Subcomm. on Basic Research of the House Comm. on Science*, 105th Cong. (Sept. 30, 1997) (testimony of Anthony M. Rutkowski, World Internet Alliance) (visited Nov. 23, 1997) <http://www.house.gov/science/rutkowski_9-30.html>.

reservations, particularly to the signature of the gTLD-MoU by WIPO and the ITU.⁴⁷ Without endorsement by the United States, the proposal could be significantly undercut, especially if the United States blocks the addition of the new gTLDs to the authoritative root servers which translate domain names into IP numbers. This would mean that the majority of Internet users would not be able to access those sites.

The release of the United States government Green Paper on Internet Names and Addresses⁴⁸ casts further doubt on the eventual success of the gTLD-MoU. This report specifically notes that “the decision to add new top-level domains cannot continue to be made on an ad hoc basis by entities or individuals that are not formally accountable to the Internet Community.”⁴⁹ Furthermore, the Green Paper restricts the expansion of new registries, such as CORE, to a single top-level domain; it also limits the number of new registries to five.⁵⁰ The gTLD-MoU’s place in this schema is far from clear.

However, despite deficiencies in process, the gTLD-MoU may yet garner the approval of Internet users. The proposal can only succeed if these users find value in the new gTLD name space. It is this consensus that will lend legitimacy to the proposal, and encourage others to participate in the system. This participation, in turn, will lead to network externalities—the utility of the gTLD name space will increase as more users

47. See Rebecca Vesely, *US Seeks Alternative Domain-Name Plan*, WIRED NEWS (May 2, 1997) <<http://www.wired.com/news/topfram/3603.html>> (“As a result of objections voiced by the United States and the European Union, both international agencies on Thursday refrained from their planned signing of the agreement.”). See also Dan Brekke, *Domain-Plan Chief Sees US, EU Backing*, WIRED NEWS (May 13, 1997) <<http://www.wired.com/news/news/politics/story/3817.html>> (“Both [the US and the EU] called for more time to study the system before it goes into effect.”).

48. *A Proposal to Improve Technical Management of Internet Names and Addresses: Discussion Draft* (last modified Jan. 30, 1998) <<http://www.ntia.doc.gov/ntiahome/domainname/dnsdrft.htm>>.

49. *Id.* In addition, the Green Paper proposes the creation of a not-for-profit corporation to manage so-called “coordinated functions.” These functions would include “oversee[ing] policy for determining, based on objective criteria clearly established in the new organization’s charter, the circumstances under which new top-level domains are added to the root system.” *Id.* See also *Comments on the Registration and Administration of Internet Domain Names* (visited Feb. 16, 1998) <<http://www.ntia.doc.gov/ntiahome/domainname/domainname.htm>> (archiving public comments on domain name system policy options).

50. See *supra* note 48.

register gTLD domain names.⁵¹ In essence, the market will decide whether the gTLD-MoU is a good proposal.

B. Trademark Wars II?

The rapid expansion of the Web and the popularity of the .com name space have fueled many domain name disputes as the number of viable or memorable domain names has become depleted.⁵² The gTLD-MoU attempts to solve this scarcity problem by expanding the available domain name space. Businesses unable to register their own name or trademark as a .com address can now register it as a .firm or .shop address. A key problem in these domain name disputes is that a single name can be registered by many businesses as a trademark as long as the mark passes the likelihood of confusion standard.⁵³ However, only one trademark holder, usually the first-comer or the stronger mark, can register the domain name in the .com name space because domain names must be unique. The gTLD-MoU makes it possible for more than one trademark holder to register the same SLD by creating alternatives to .com.

It is unclear, however, that the gTLD-MoU will solve the problems posed by recent litigation. Those cases which deal with intentional pirating of domain names⁵⁴ typically involve so-called "famous" trademarks, protected under the Federal Trademark Dilution Act.⁵⁵ Suddenly, these

51. Network externalities arise where "the utility that a given user derives from the good depends upon the number of other users who are in the same 'network' as is he or she." Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424, 424 (June 1985). Classic examples include the telephone and other communications systems. *See id.* In this case, the good is a gTLD-MoU domain name. If only a few such domain names exist, it would be unlikely that many DNS servers would list these names and most Internet users would be unable to access them. In contrast, if many gTLD-MoU domain names exist, DNS servers would be more likely to list these names, thereby increasing accessibility. In addition, Internet users and consumers would be more likely to recognize these gTLDs and use them as indexing tools in browsing the Internet, i.e. employing the formulae "anyfirm.firm" and "anyshop.shop;" this would increase the value of the gTLD-MoU domain names by attracting more traffic to the gTLD-MoU name space.

52. *See, e.g.,* Panavision Int'l, L.P. v. Toeppen, 945 F. Supp. 1296 (C.D. Cal. 1996); Planned Parenthood v. Bucci, 42 U.S.P.Q.2d (BNA) 1430 (1997).

53. *See, e.g.,* Data Concepts, Inc. v. Digital Consulting, Inc., No. 3-96-0429 (M.D. Tenn. May 20, 1997) (finding likelihood of confusion between data management software providers contesting use of "dci.com"); Comp Examiner Agency, Inc. v. Juris, Inc., No. 96-0213-WMB, 1996 WL 376600 (C.D. Cal. April 26, 1996) (applying likelihood of confusion analysis to domain name dispute over "juris.com").

54. *See, e.g.,* Intermatic, Inc. v. Toeppen, 40 U.S.P.Q.2d (BNA) 1412 (N.D. Ill. 1996); Panavision Int'l, L.P. v. Toeppen, 945 F. Supp. 1296 (C.D. Cal. 1996).

55. 15 U.S.C. § 1125(c) (1995).

trademark owners will again face the problem of pirating, this time in seven new gTLDs. The gTLD-MoU attempts to address this problem in its dispute policy, protecting “internationally known” trademarks. But whether “internationally known” and “famous” are co-extensive remains to be seen. In any case, CORE Registrars will not police their registrations for conformance with this policy.⁵⁶ This puts the burden on “famous” trademark owners to register their marks in the new gTLDs or to shoulder the transaction costs arising from dispute resolution and litigation in the case of domain name pirates. Dispute resolution may be less costly in this framework because the ACPs are designed to resolve these disputes without litigation. Nonetheless, uncertainty will remain.

The addition of seven new TLDs is also unlikely to solve more traditional likelihood of confusion cases. While the additional categorization may prove effective in some instances, the similarity of the gTLDs may further confuse consumers. First, the .com and .firm gTLDs are indistinguishable. If two businesses with the same name and similar products register as acme.com and acme.firm, there is little hope that the consumer will be able to find the right one and every expectation that the consumer will be confused. Second, many of the gTLDs overlap. For example, NBC falls into almost every single one of the proposed gTLDs. It is a business (.firm); it sells many products related to its television offerings (.shop); it offers cultural programming (.arts); its primary business is entertainment (.rec); it distributes news (.info); and it provides on-line content and activities related to its business (.web). Where will consumers go to find such an entity?

Finally, there is some concern as to the role of the ACPs in resolving domain name disputes. While the gTLD-MoU provides that decisions of the ACPs shall not “inhibit, affect or prevent the power of the appropriate national or regional courts to hear cases interpreting and enforcing intellectual property rights that fall within their jurisdiction,”⁵⁷ CORE Registrars are nonetheless obligated to respect the decisions of the ACPs.⁵⁸ Additional jurisdictional problems arise out of the incorporation of CORE in Switzerland.

56. See *CORE-MoU*, *supra* note 32, at § 6(g) (“CORE Registrars will not examine applications for second-level domain names for conformance with the policy stated in Article 2(f) above.”).

57. *gTLD-MoU*, *supra* note 4, at § 8(c).

58. See *id.* § 8(b); *CORE-MoU*, *supra* note 32, at § 7(c).

C. A New Monopoly?

NSI's institution of domain name registration fees was a primary motivating force behind the creation of the gTLD-MoU. This practice ran counter to a culture and tradition that valued an unregulated and free Internet. While the gTLD-MoU does not break NSI's monopoly on the registration of .com, .net, and .org gTLDs, it does provide some competition.⁵⁹ The effectiveness of the gTLD-MoU's attack on NSI's monopoly will very much depend on its popularity with Internet users. For many years, .com has been the only game in town for commercial entities. Not only does the .com name space provide an effective directory of businesses on the Internet,⁶⁰ it also has acquired premium status as well as commercial value, mostly due to network externalities. It may therefore prove difficult to challenge NSI's position, at least until actual competition in the .com, .net, and .org gTLDs arises.

There is also some concern that the gTLD-MoU will prove to be yet another NSI. In a recent suit instigated by Image Online Design, the IANA and the IAHC faced claims of unfair competition and antitrust violations for the "appropriation" of the .web gTLD.⁶¹ Image Online Design claimed that it had previously been granted the right to become a registry for addresses in the .web TLD.⁶² The judge denied Image Online Design's request for a Temporary Restraining Order,⁶³ but the implication that the gTLD-MoU may be claiming an *exclusive* right to create and administer new gTLDs, regardless of previous claimants, is troublesome. Nonetheless, the institution of multiple Registrars for the new gTLDs is pro-competitive and will hopefully produce consumer benefits.⁶⁴

59. There is also some indication that the gTLD-MoU may enter into registration of these gTLDs following the expiration of NSI's contract in 1998. See *gTLD-MoU*, *supra* note 4, at § 10(a) ("Pending the expiration or appropriate amendment of the Cooperative Agreement under which the '.com' '.org' and '.net' gTLDs are presently administered, the '.com', '.org' and '.net' gTLDs shall not be subject to the provisions of this MoU.").

60. Often, rather than resorting to a search engine, users simply try the formula "www.companyname.com" when searching for a business on the Web. With the introduction of multiple gTLDs, this de facto directory may encourage companies to continue to register in the .com name space where possible.

61. See *supra* note 42.

62. See *id.*

63. See *id.*

64. The US Green Paper on Internet Names and Addresses also addresses the problem of competition, recognizing that "[w]here possible, market mechanisms that support competition and consumer choice should drive the technical management of the Internet" *A Proposal to Improve Technical Management of Internet Names and Addresses: Discussion Draft* (last modified Jan. 30, 1998) <<http://www.ntia.doc.gov/ntiahome/> do-

IV. CONCLUSION

The gTLD-MoU is flawed, but not beyond redemption. Problems of accountability and legitimacy may be overcome if the proposal proves amenable to Internet users. Representation on the POC should be expanded and diversified, however, to incorporate the many constituencies which have a stake in the Domain Name System. While this may prove difficult administratively, it can only add to the likelihood of the gTLD-MoUs success. Furthermore, placement of the new gTLDs in the Domain Name System root servers is absolutely critical to the success of this proposal. This means that the gTLD-MoU must also attract governmental support as the US government may have the ability, if not the authority, to block such an action.

Trademark disputes will most likely continue to plague domain name registrations. The effectiveness of the ACPs will play a central role in limiting such disputes in the new gTLDs. Stakeholders may be wary of such panels, however, and continue to bring these cases to the courts where ultimately the rules of law will have to be settled.

Effective competition in the registration of domain names will largely depend on the popularity of the new gTLDs and the willingness of registrants and Internet users to defect from the .com name space. Ideally, the pro-competitive motivations of the gTLD-MoU will prevent any monopolistic and anti-competitive practices by the POC, though its move to shut down alternative proposals to expand the Domain Name System is cause for concern. Ultimately, however, Internet users will determine the fate of the gTLD-MoU.

mainname/dnsdrft.htm>. This report endorses competition among registrars wholeheartedly, but balks at a market-driven registry system, tentatively recommending limited experimentation. *Id.*

EXHIBIT JZ-12



Cooperative Agreement Between NSI and U.S.
Government

Effective: 1 January 1993

**Network Information Services Manager(s) for NSFNET and the NREN:
INTERNIC Registration Services
COOPERATIVE AGREEMENT NO. NCR-9218742**

Parties:

National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20550

and

Network Solutions, Incorporated
505 Huntmar Park Drive
Herndon, VA 20170

COOPERATIVE AGREEMENT NO. NCR-9218742

Parties:

National Science Foundation

and

Network Solutions, Incorporated

Title:

Network Information Services Manager(s) for NSFNET and the NREN: INTERNIC Registration Services

Type of Award:

Cost-Plus-Fixed-Fee Cooperative Agreement

Estimated Total Amount:

\$4,219,339

Effective Date:

January 1, 1993

Expiration Date:

September 30, 1998

Authority:

This agreement is awarded under the authority of the National Science Foundation Act (R@ U.S.C. 186 et seq.) and the Federal Grant and Cooperative Agreement Act (31 U.S.C. 6301 et seq.)

This agreement is entered into between the United States of America, Hereinafter called the Government, represented by the National Science Foundation, hereinafter called the Foundation or NSF, and Network Solutions, Incorporated, hereinafter called the Awardee.

NSF Program Official:

Donald R. Mitchell
Telephone : 202-357-9717
e-mail: dmitchelf@nsf.gov

NSF Administrative Official:

Altie H. Metcalf
Telephone: 202-357-9843
e-mail: ametcalf@nsf.gov

IN WITNESS WHEREOF, the parties have executed Cooperative Agreement No. NCR-9218742, Network Information Services Manager(s) for NSFNET and the NREN: INTERNIC Registration Services.

UNITED STATES OF AMERICA

ACCEPTANCE

Aaron R. Asrael
Grants and Contracts
(Date)

Roger L. Evans
Chief Financial Officer
(Date)

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

Network Solutions, Incorporated
Herndon, VA 22070

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II. GENERAL CONDITIONS

Grant General Conditions - GC-1 (10/91)
Cooperative Agreement General Conditions - CA-1 (12/91)

ARTICLE 1. BACKGROUND AND PURPOSE OF AGREEMENT

During the past two decades computer networks have facilitated collaboration among members of many research and education communities and provided them with remote access to information and computing resources. These networks have continued to grow both in the number of users connected and in the capabilities provided to the individual users. It is anticipated that such networks will become essential to research and education during this decade. In particular, the collection of interconnected networks known as the Internet has become important for many research communities. It is also of increasing importance for education.

Today more than 5,000 networks comprise the Internet. These networks link together hundreds of thousands of computers and millions of users throughout the world. The domestic, non-military

portion of the Internet includes NSFNET. It also includes other federally sponsored networks such as NASA Science Internet (NSI) and Energy Sciences Network (Esnet). NSFNET, NSI, and Esnet, as well as some other networks of the Internet, are related to the National Research and Education Network (NREN) which was defined in the President's Fiscal 1992 budget and which has been authorized by the passage in December, 1991, of the High Performance Computing and Communications Act, Public Law 102-194.

The NREN is projected to evolve from a part of the Internet containing portions of NSFNET, NSI, and Esnet. This evolution will reflect the legal and technical requirements of the various sponsoring agencies. For example, NASA and DOE are mission agencies whose networks' traffic must relate to the agencies' missions. NSF, on the other hand, is chartered to support science and engineering research and education; hence NSFNET can carry all traffic contemplated for the NREN and may in fact support additional traffic as well.

Because of the breadth of the charter of the NSFNET, it is projected that it will continue to serve an expanding base of research and education users. The provision of enhanced network information services for NSFNET will be an important part of the expansion in user base.

In cooperation with the Internet community, the National Science Foundation developed and released, in the spring of 1992, Project Solicitation NSF92-24 for one or more Network Information Services Managers (NIS Manager(s)) to provide and/or coordinate (i) Registration Services, (ii) Directory and Database Services, and (iii) Information Services for the NSFNET. As a result of this solicitation, three separate organizations were selected to receive cooperative agreements in the areas of (i) Registration Services, (ii) Directory and Database Services, and (iii) Information Services. Together, these three awards constitute the NIS Manager(s) Project.

It is essential that the three project participants selected work closely together to provide a seamless interface for users in need of services. For this reason, the three awardees, at the request of the Foundation, have developed a detailed concept and plan to provide this seamless interface called the "INTERNIC," have revised their proposals to reflect the implementation of the "INTERNIC" concept, and have agreed to the structuring of their three (separate) awards as one collaborative project. This Cooperative Agreement for Registration Services is one of the three (3) collaborative awards resulting from the NIC Manager(s) Project solicitation.

It is anticipated that all registration services required during the period of this Agreement will be obtained and furnished under the terms of this Agreement and that the definition and providing of these services will help facilitate the evolution of the NSFNET and the development of the NREN. References to NSFNET in this Agreement should in general be understood to include the NREN as well.

ARTICLE 2. SPECIAL REQUIREMENTS

A. Collaborative Proposals and Effort(s)

1. An important aspect of the Awardee's work is coordination with the Network Information Services Managers for (i) Database and Directory Services (AT&T under Cooperative Agreement NCR-9218179) and (ii) Information Services (General Atomics under Cooperative Agreement NCR-9218749) to provide a "seamless interface" for internet users in accordance with the "INTERNIC" concept explicated in the Awardee's revised proposal dated October 19, 1992. Hereafter in this agreement, Awardee's two collaborating partners, General Atomics and AT&T, shall be referred to as Collaborators and Awardee shall coordinate its performance hereunder with the efforts of its Collaborators in accordance with the "INTERNIC" concept explicated in the Awardee's revised proposal dated October 19, 1992. The NSF Program Official reserves the authority to resolve technical, managerial, or scheduling disputes.

2. This requirement for close collaboration and coordination among the three aspects of the Network Information Services Management Project shall be stated in each of the three awards. Such collateral agreements and fund transfers consistent with the currently approved Program Plan (see Article 9) as may be necessary to effect the coordination, collaboration and seamless interface to users called for by the "INTERNIC" concept or improve the overall integration of the NIS Manager(s) Project may be entered into by, between and among the Awardee and its Collaborators without further Foundation approvals. Absent a specific inclusion in the approved

Program Plan, Awardee fund transfers made pursuant to this Article may not exceed \$50,000 in any Program Year.

B. Directed Activities

At the request of the NSF Program Director, as set forth in article 13 (below), the Awardee shall attend such meetings, seminars, conference and planning and other events and shall provide such related supplies and services as necessary to promulgate information regarding registration activity to the worldwide internet community and to facilitate the most effective, efficient and ubiquitous registration services possible.

ARTICLE 3. STATEMENT OF WORK

A. The Awardee shall provide to non-military internet users and networks all necessary registration services (which were) previously provided by the Defense Information Systems Agency Network Information Center(the DISA NIC).

B. The work will be performed in general accordance with NSF Project Solicitation NSF 92-24 for Network Information Services Manager(s) for the NSFNET and the NREN, the Awardee's proposal No. NCR-9218742, dated September 23, 1992, amended by Awardee's supplemental proposal addressing collaborative INTERNIC activity, dated October 19, 1992, hereinafter referred to cumulatively as Awardee's Proposal, and in conformance with the technical and/or performance requirements contained therein and set forth below.

C. The Awardee shall provide registration services in accordance with the provisions of RFC 1174. As stated in RFC 1174:

[T]he Internet system has employed a central Internet Assigned Numbers Authority (IANA) for the allocation and assignment of various numeric identifiers needed for the operation of the Internet. The IANA function is currently performed by the University of Southern California's Information Sciences Institute. The IANA has the discretionary authority to delegate portions of this responsibility and, with respect to numeric network and autonomous system identifiers, has lodged this responsibility with an Internet Registry (IR).

D. Moreover, in cooperation with the IANA, the IR may create delegate registries to carry out registration services for specified domains.

E. The Awardee shall work with the DISA NIC to design and implement a transition plan, as outlined in Awardee's Proposal, that will minimize inconvenience to the networking community during and after the transition.

F. The Non-military internet registration services to be provided under this agreement will initially include, but not be limited to, the following:

1. Domain name registration
2. Domain name server registration
3. Network number assignment
4. Autonomous system number assignment

G. Possible future changes in the registration services provided under this Agreement may include, but shall not be limited to, the use of alternate registration/numbering systems or schemes and the imposition of a user based fee structure. However, in no case shall any user based fee structure be imposed or changed without the express direction/approval of the NSF Program Official.

ARTICLE 4. TURNAROUND AND PERFORMANCE MEASURES

A. The following describes the required turnaround and availability of Registration data:

1. 3 working days/Class C
2. 5 working days/Class B
3. 22 working days/Class A

B. Turnaround is the time from receipt of a completed template, and any information pertaining to

network topology and usage of previously assigned address space as may be specifically requested in individual cases, to the assignment of a number. Availability is the provision of the registration data to the INTERNIC Database and Directory Services Awardee.

C. The quality of Awardee's registration services will be measured in accordance with the formulae contained in Section J of Awardee's revised proposal of September 23, 1992 and in light of the turnaround times specified above.

ARTICLE 5. ESTIMATED REQUIREMENTS AND REVIEW

A. Estimated Requirements

The registration services currently required for the performance of this Cooperative Agreement are described above. The registration services described above are only an estimate of the immediate and long-term requirements of the scientific research and education community and are furnished for planning purposes only. Since the future needs of the scientific research and education community are unknown at this time, the Foundation reserves the right to increase, decrease or modify the quantity, quality, content or nature of the registration services to be provided hereunder. Should the Foundation exercise the right to increase, decrease or modify the quantity, quality, content or nature of the registration services provided hereunder, appropriate change to estimated costs, fees, and funding schedules shall be negotiated and incorporated into the Agreement.

B. Performance Review

By December 31, 1994, the Foundation will review the project to determine whether to continue funding and to provide general direction as to the continuation and contemplated level of future support to be provided for the remainder of the agreement.

ARTICLE 6. RESPONSIBILITIES

A. Awardee

The Awardee has primary responsibility for ensuring the quality, timeliness and effective management of the registration services provided under this agreement. To the extent that NSF does not reserve specific responsibility for accomplishing the purposes of this Agreement, by either special condition or general condition of the Agreement, all such responsibilities remain with the Awardee.

B. National Science Foundation

1. General

NSF has responsibility for registration services support, support planning, oversight, monitoring, and evaluation. NSF will make approvals required under the General Conditions and, where necessary and appropriate, NSF will contact and negotiate with Federal agencies and other national and International members of the Internet community to further the efforts of this project.

2. Technical

a. Program Officer Authority

Performance of work under this Cooperative Agreement shall be subject to the general oversight and monitoring of the NSF Program Officer. This involvement may include, but is not limited to:

- (1) Review of the Quarterly and Annual Reports, Program Plans and Budget.
- (2) Participation in resolution of technical, managerial and scheduling concerns; review and, where required by the Agreement, approval of technical reports and information to be delivered by Awardee.

b. Limitations

NSF technical involvement will be consistent with the general statement of work as stated in this Agreement. The Program Officer does not have the authority to and may not:

- (1) request additional work outside the Statement of Work;
- (2) issue instructions which constitute a change as defined in Article 8 of GC-1(10/91);
- (3) require an increase in the Agreement's estimated cost or extension to the Agreement's period of performance, or;
- (4) change any of the expressed terms, conditions or specifications of the Agreement.

c. Awardee Notifications

If, in the opinion of the Awardee, any instructions or requests issued by the Program Officer are within one of the categories as defined in (1) through (4) in the above paragraph, the Awardee shall not proceed but shall notify the NSF Grants and Contracts Officer and shall request, if appropriate, amendment of the Agreement in accordance with Article 37, "Changes -- Limitations of Funds," of the Attached Cooperative Agreement General Conditions.

3. Approvals

Unless stated otherwise, all NSF approvals, authorizations, notifications and instructions required pursuant to the terms of this agreement must be set forth in writing by the NSF Grants and Contracts Officer.

ARTICLE 7. PERIOD OF PERFORMANCE

This Agreement, effective January 1, 1993, shall include a three month phase-in period, a five (5) year period of operational support (commencing April 1, 1993), and a six month (no additional cost) flexibility period and shall continue through September 30, 1998.

ARTICLE 8. FUNDING

A. Agreement Amount

The current total estimated amount of this Cooperative Agreement, exclusive of such amounts as may be provided in connection with Directed Activities provided pursuant to Article 11 (below) is \$5,219,339 of which [Proprietary Figures Omitted]

B. Allotted Amount(s)

1. There is currently allotted and available for expenditure for provision of registration services under this agreement, exclusive of amounts allotted for Directed Activities(as shown in paragraph 3, below), \$1,162,245, of which [Proprietary Figures Omitted]
2. Amounts anticipated to be needed for reimbursement of costs incurred in connection with Directed Activities as provided pursuant to Article 11 (below) are not included in the allotted amount(s) shown in paragraph 8.C, below. Amounts for directed activities may be allotted from time to time throughout the period of this agreement.
3. There is currently allotted and available for expenditure in connection with reimbursement for directed activities under this agreement \$0.

C. Obligation

For purposes of payment of the Foundation's portion of all allowable costs (including those incurred in connection with the performance of Directed Activities in accordance with Article 11 below) pursuant to the terms outlined in this Agreement, the total amount currently allotted by the Government to this Cooperative Agreement is \$1,162,245. This allotment covers performance through March 31, 1994.

D. Limitation of Funds

1. The parties estimate that performance of this Cooperative Agreement will not cost the Government more than the estimated amount specified in Article 8.A, Agreement Amount, above. The Awardee shall use its best efforts to perform the work specified in Article 3 and all obligations under this award within the allotted funds.

2. Paragraph C of this Article specifies the cumulative amount presently available for payment by the Government and allotted to this award. The parties contemplate that the Government will allot additional funds incrementally to the award up to the full estimate specified in Article 8.A, Agreement Amount, above.

3. The Awardee shall notify the NSF Grants and Contracts Officer in writing whenever it has reason to believe that the costs it expects to incur under this Agreement in the next 60 days, when added to all costs previously incurred, will exceed 85% of the total amount so far allotted to the Agreement by the Government.

4. When and to the extent that the amount allotted by the Government is increased, any costs the Awardee incurs before the increase that are in excess of the amount previously allotted by the Government, shall be allowable to the same extent as if incurred afterward.

E. Compensation and Expenditures

1. As compensation for its performance under this agreement, Awardee shall be compensated for its direct and indirect costs (see Article 8.E.3) and shall be paid a fixed fee as provided in this agreement.

2. The Awardee shall also be reimbursed for such travel and related costs as may be specifically required and approved by the NSF Program Director pursuant to Article 11 (below). Expenditures under this agreement must be in accordance with a current Budget or Program Plan which has been approved by the NSF Grants Officer and no reallocation of funds in excess of \$10,000 between budget line items is permitted without prior written (or e-mail) approval of the NSF Program Official.

3. The amount currently allotted includes an indirect cost allowance at the following maximum provisional rates, subject to downward adjustment only:

Internet Services [Proprietary Figure Omitted]
Material Burden [Proprietary Figure Omitted]
G&A [Proprietary Figure Omitted]

F. Future Allotments

The actual level of continued NSF support for future years will be negotiated annually with the Awardee and will depend upon annual review of progress, the proposed Program Plan and the availability of funds. The actual funding of such allotments may be provided unilaterally by NSF on an incremental basis.

ARTICLE 9. ANNUAL REPORT, PROGRAM PLAN AND BUDGET

By December 31 each year, the Awardee shall submit both electronically and in 10 hard copies an Annual Report, Program Plan and Budget to the Foundation for approval. These Program Plans and Budgets shall be submitted in a format and level of detail approved by the Foundation but shall, as a minimum, contain project goals and objectives specified with sufficient technical criteria, milestones, and timetables to measure the progress of the effort toward the attainment of objectives during the time period for which it is being submitted. This Program Plan will be the basis for the performance goals and funding for succeeding twelve month operational period beginning April 1. Each submission should contain narrative information indicating (for the past year's activities) by functional area and overall; any goals accomplished, exceeded, or missed and explaining any significant deviations from the previous year's plan; any educational achievements; patents, copyrights, or other innovations resulting from the activities; industrial and other funding, income and contributions. Each annual submission should also contain information on actual line charges and expenditures (both annual and cumulative) by functional area and overall, in the same level of detail for which it projects the succeeding year's costs, and a summary budget in accordance with NSF Form 1030. The Awardee will receive formal approval

of the Program Plan from the NSF Grants Officer. The Foundation accepts (i) the Awardee's proposal as the Program Plan covering the period April 1, 1993, through May 31, 1994; and (ii) the budgets dated October 19, 1992, as the approved budgets for the period January 1, 1993, through May 31, 1994.

ARTICLE 10. OTHER REPORTING REQUIREMENTS

A. Timely Notification of Significant Problems

The Awardee shall inform the NSF Program Official (either by e-mail or in writing) in a timely manner of any significant problems or events that could affect the overall schedule or progress in the program.

B. Verbal Reports, Collaboration Briefings and Liaison

1. The Awardee shall meet on an informal basis, as necessary or requested, with the NSF Program Director to review progress to date and to exchange views, ideas, and information concerning the program. During the initial three (3) month phase in period, and thereafter until notified by the NSF Program Director, a weekly status review meeting shall be held to discuss the progress of the transition/phase in, including any problems or delays encountered and changes occasioned by same. (Such weekly status review meetings may be held by telephone and the substance thereof confirmed via e-mail when agreed.

2. The Awardee and Collaborators shall jointly meet, as requested, with the NSF Program Director to detail the progress and discuss the status of the collaboration effort and any difficulties being encountered in providing to the Internet community the seamless interface service envisioned by their collaborative proposal and called for in Article 2 in (above). It is currently contemplated that, at least during the first twelve (12) months of the award, such meetings shall be held quarterly at either NSF, the Awardee's or Collaborator's facilities.

3. When requested by the NSF Program Director, Awardee shall arrange to have its subawardees in attendance at meetings which deal with their areas of activity. In addition, at the request of the NSF Program Director, the Awardee shall arrange on-site meetings for the Program Officer, other Federal staff and/or representatives of the world-wide Internet community and the Awardee's professional personnel, and/or those of its subawardees.

C. Monthly Letter Progress Reports

Monthly letter progress reports may be submitted electronically to the NSF Program Official and NSF Administrative Official at the address shown on the cover page. These (monthly letter progress) reports shall be submitted in such detail and format as required by the Foundation's Program Director and shall contain statistical and narrative information on the performance of the Awardee during the preceding month.

D. Quarterly Status Report

1. Awardee shall prepare and furnish electronically and in four hard (4) copies quarterly letter status reports; the first quarterly status report will be for the period from January 1, 1993, through March 31, 1993. These reports shall show the status of all major events and summaries and major work performed during the quarter, including technical status, accomplishments, problems, collaboration activities, changes in future plans, and any pending requests for NSF approval and should be fully reconciled with the information, goals and projections contained in the Annual Report and Program Plan. The report shall also include a summary of award expenditures and line charges both cumulative and for the current quarter.

2. The report shall be prepared on a quarterly basis and shall be submitted within (30) days after the reporting period ends. No quarterly report need be submitted for the quarter in which the Annual Reports are submitted, but, Awardee must insure that any germane information for the quarter not contained in the Annual Report (i.e., list of pending requests for NSF approval) and submitted by separate letter.

E. Final Report

The Awardee shall submit electronically and in ten hard (10) copies a final report to NSF at the conclusion of the Cooperative Agreement. The final report shall contain a description of all work performed and problems encountered (and if requested a copy and documentation of any and all software and data generated) in such form and sufficient detail as to permit replication of the work by a reasonably knowledgeable party or organization.

F. Submission of Reports

All reports and Program Plans are to be forwarded to the Foundation electronically. Hard copies of reports are indicated to be forwarded in the specified number of copies to the following destinations:

No. of Copies	Addressee
1	National Science Foundation e-mail: awilson@nsf.gov ATTN: Alfred W. Wilson Division of Grants and Agreements, Room 495 Arlington, VA 22230 [Amend 01]
Remainder	National Science Foundation e-mail: dmitchel@nsf.gov ATTN: Donald Mitchell Division of Networking and Communications Research and Infrastructure, Room 1175 Arlington, VA 22230 [Amend 01]

ARTICLE 11. DIRECTED ACTIVITIES

From time to time the NSF Program Director may require the Awardee to attend such meetings, seminars, conferences and planning and other events and/or to provide related supplies and services as necessary to disseminate information regarding registration services activity to the worldwide Internet community and/or to facilitate the most effective, efficient and ubiquitous registration services possible on an expedited basis. In such a case, the following procedures will be followed;

- A. The NSF Program Director shall request, by e-mail, the Awardee's attendance or special services required and an estimate by the Awardee of any reimbursable costs involved;
- B. Awardee shall submit to the NSF Program director, by e-mail, its estimate of any such reimbursable costs involved; and
- C. the NSF Program Director shall forward to the Awardee a letter directive requesting that the travel be performed and/or the special services be provided and specifying the maximum amount that Awardee will be reimbursed for its efforts pursuant to the letter directive.
- D. Pursuant to such a letter directive, Awardee may incur costs against the "Directed Activities" amounts included in the approved budget provided (i) that the costs so incurred do not exceed the maximum amount specified in the letter directive and (ii) provided also that the awardee may not incur costs under a letter directive if such costs, when combined with costs incurred under other letter directives will exceed the amount allotted for directed activities as set forth in Article 8.B.2 (above).

ARTICLE 12. KEY PERSONNEL

- A. The following individuals are considered key personnel and essential to the work:

Alan S. Williamson
John Zabluski

- B. Any changes in the individual (s) or significant changes in their proposed level of effort as set forth in the approved Program Plan for any period requires the prior written approval of the NSF Grants and Contracts Officer.

ARTICLE 13. ORDER OF PRECEDENCE

Any inconsistency in this Cooperative Agreement shall be resolved by giving precedence in the following order (a) the Special Provisions; and (b) Grant General Conditions (5/94) and Cooperative Agreement General Conditions (5/94). [Amend 01]

ARTICLE 14 PUBLICITY, PUBLIC INFORMATION, AND PUBLICATIONS

A. All news releases, public information brochures, publications and other similar items (not limited to printed media, and including video, etc., prepared by Awardee, subawardees, and/or their employees or contractors which describe activities or results under this Registration Services Agreement shall:

1. acknowledge the sponsorship of NSF:
2. be sent to NSF in reasonable quantities for project and related NSF distribution before being distributed or shown to the public; and
3. in the case of news releases or public information, be coordinated with and have the approval of the NSF Program Official before release.

B. An acknowledgment of NSF support must appear in any publication of any material, whether copyrighted or not, based upon or developed under this project, in substantially the following terms:

The material is based on work sponsored by the National Science Foundation under Cooperative Agreement No. NCR-9218742. The Government has certain rights in this material.

C. All writings such as reports, books, journal articles, software, data bases, sound recordings, video tapes and video discs, except scientific articles or papers published in scientific, technical or professional journals, must also contain the following disclaimer:

Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

ARTICLE 15. PROJECT INCOME FROM REGISTRATION FEES

A. If, and to the extent that Awardee is authorized and/or directed to charge and collect user fees for the Registration Services provided hereunder, any user fees so collected shall be placed in an interest bearing account, and shall be used to defray the Awardee's and the Foundation's Project expenses in the following descending order of priority:

1. Project expenses incurred by Awardee as a result of the imposition of such fees.
2. Project expenses of the Awardee charged to the Foundation under this award. (Program Plans and future year funding requests should reflect any such Income.
3. Project expenses of Awardee's Collaborators charged to the Foundation under their respective Awards. (Program Plans and future year funding requests should reflect any such inform and project fund transfers.
4. The provisions of this Article shall apply only to any Project Income which is generated from the imposition of user based fees on registration services. Article 19, Project Income, of the General Conditions shall apply to project related revenue from any other source [Amend 01].

Comments concerning the layout, construction and functionality of this site should be sent to webmaster@icann.org

Page Updated 10-Nov-2002
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EXHIBIT JZ-13

Note: THIS IS A DRAFT!!! This paper was written as part of dissertation proposal many weeks prior to the release of the "White Paper" in June 1998. A few small revisions were made after the White Paper was published. This paper was not intended for publication in its current form, and it is not backed by supporting documents sufficient to meet the threshold required of publishable scholarship in the field of international relations. The theoretical excursion near the end is probably understandable--if at all--only to people who are familiar with the refined jargon of structuration. Some sections are incomplete. The last year of the controversy is either abbreviated or overlooked entirely. Moreover, this draft does not fully represent my current understanding of the topic. Despite its evident shortcomings, however, I believe it may be useful to other students of this issue, so I offer it here.

NOTE ALSO: At the time of this writing, October 1998, the last sentence of the first paragraph seems overly strong. The initial draft of this paper was written from the perspective that the Green Paper of January 1998 had blocked the MoUvement. The paper in large part analyzed the defeat of the MoUvement. However, the release of the White Paper gave new life to the MoUvement's prospects, and the context of that event motivated the last sentence of the first paragraph. At this time, things are very much undecided.

The Technical Construction of Globalism: Internet Governance and the DNS Crisis

by Craig Simon.

A case study for *Bandwidth Rules*

This is a rough draft, not running code.

[T]echnological innovations inherited from the past ... cannot legitimately be presumed to constitute socially optimal solutions....

---Paul David

On the information superhighway, national borders aren't even speed bumps.

---Timothy C. May

The Mouvement (pronounced like movement) discussed in this article refers to supporters of a document titled "Memorandum of Understanding on the Generic Top Level Domain Name Space of the Internet Domain Name System." The document's name is frequently abbreviated to gTLD-MoU, or just MoU, hence Mouvement. It is a clumsy word, but one of many awkward terms in a story that contains enough acronyms to fill a whole can of alphabet soup. The Mouvement allied a diverse group of Internet engineers, trademark attorneys, and officers of Geneva-based intergovernmental organizations in a bid to establish formal power over a crucial technical feature of the Internet called the domain name system (DNS). A key institution of the proposed structure was called the Council of Registrars (CORE). The Mouvement's effort to have CORE's computers recognized as the authoritative working center of the DNS was opposed by a conglomeration of competing business interests, and, for several

months, by the U.S. government. An alternative institutional framework is now being established and is likely to incorporate several of the Mouvement's central principles.

With annual revenues under \$200 million, the domain name registration business accounts for a relatively small share of the global Information Technology (IT) industry. Nevertheless, the DNS is a fulcrum of Internet activity. The battle to reorganize it, which erupted in September 1995, is central to understanding how the people involved in designing the Internet as a global structure are challenging the rules, and therefore the rule, of the existing system of sovereign states.

The following discussion is organized into four sections. The first will serve as an introduction that briefly presents the empirical background of the discussion and raises a conceptual framework. The second is meant to provide a lengthier, straightforward accounting of the salient technical and historical details. The third will focus on conceptual and analytical questions, opening the way for an argument (to be added in the next draft) where facts and framework converge. The fourth section, an attached document, includes my submission in response to the U.S. government's February 20 1998 Notice of Proposed Rulemaking titled "Improvement of Technical Management of Internet Names and Addresses."

INTRODUCTION

DNS management is currently vested in the Internet Assigned Numbers Authority (IANA), a group of half a dozen or so people who are actively involved in monitoring Internet standards and providing key technical services to individuals associated with the Internet Engineering Task Force (IETF). Both these organizations evolved out of the ad hoc Network Working Group (NWG) that began activities in the late 1960s and morphed into the Internetworking Conference Control Board (ICCB). The ARPANET, then the NSFNET, and finally what we know now as the Internet emerged due to the work of these groups (Hafner and Lyon 1996, Braden 1998). The IANA has operated since 1984 under the direction of Dr. Jon Postel, Associate Director for Networking, at the University of Southern California's Information Sciences Institute (ISI) through a research grant funded by the Defense Advanced Research Projects Agency (DARPA). That grant reached approximately \$600,000 in its last year, fiscal 1998. The search for alternate funding sources for IANA was therefore a pressing concern for both the Mouvement and interested parties in the U.S. government (Rutkowski 1998).

The accelerating growth of the Internet in the early 1990s underscored the increasing importance of the institutions which formulate and regulate its standards. Thus, to provide IANA with a clearer status, it was formally chartered in 1992 by two groups: 1) the Federal Networking Council (FNC), a US government agency constituted by individuals who had been enduring proponents of the ongoing internetworking research, and; 2) the Internet Society (ISOC), a non-profit Internet support and advocacy organization. ISOC's declared mission is, "To assure the beneficial, open evolution of the global Internet and its related internetworking technologies through leadership in standards, issues, and education."⁽¹⁾ ISOC's board of trustees include a number of distinguished individuals from the information technology industry who share a strongly outspoken idealism about the potential virtues of Internet-based communication. They share a proclaimed desire to provide stewardship for the Internet through that organization, which is committed to provide an umbrella of insurance, financial support, and non-intrusive oversight for the IETF and its governing committees, granting assistance when called.

The IETF is not incorporated, and is renowned as a notoriously informal, clubbish, and steadily growing group of technical specialists drawn from large and mid-sized Internet-related firms, as well as from government and academia. Its processes are remarkably open.⁽²⁾ Entry to the tri-yearly IETF technical meetings is granted to anyone who pays the relatively low price of admission--about \$300. Nearly 2,000 people now attend its week long meetings, where participants thrash out the details of new Internet standards in open sessions and from a generously endowed computing and connectivity facility called the "terminal room," all the while feasting on free food and coffee. In addition, numerous IETF online mailing lists are open to all comers, and all contributions are voluntary except for the work of a small secretariat. Members nevertheless abide according to a highly disciplined, self-described meritocracy within an organizational structure that includes several clearly delineated and carefully supervised technical areas, each containing a number of Working Groups. Two committees provide oversight--primarily the Internet Engineering Steering Group (IESG), constituted by the Area Directors, and also the Internet Architecture Board (IAB), a panel of technical luminaries.⁽³⁾ Internet standards--whether finished, experimental, or informational--are humbly referred to as Requests for Comments (RFCs). The IANA's position as publisher of the RFC series, and the assignment of the names, numbers, and protocols that enable those is so critical to the IETF's work that Jon Postel is properly regarded as a focal point of authority for the entire Internet.

Although responsibility for the distribution of assignments rests with the IANA, over the years a significant portion of those day-to-day operations have been delegated elsewhere. Through the 1980s into the early 1990s, the DNS operations center, institutionally known as the InterNIC (Internet Network Information Center), was run by the Stanford Research Institute (SRI) under contract with the Defense Information Systems Agency (DISA). In January 1993 the InterNIC was moved to Network Solutions, Inc. (NSI) of Herndon, Virginia, through an instrument called the Cooperative Agreement. This was authorized and funded at an annual rate of approximately \$1,000,000 by the U.S. National Science Foundation (NSF).⁽⁴⁾ The award and redelegation took place in concert with the IANA. The agreement was scheduled to expire on March 31, 1998, but its language allowed for extension. Two other companies, AT&T and General Atomics, were named as contractors for specialized tasks in the Cooperative Agreement, though General Atomics dropped out in 1995.

In mid 1997, the NSF announced that it would not renew the Cooperative Agreement, but retained the option to activate a provision for a six month "ramp down" extending the NSI's status through the end of September 1998. Due to the general push for privatization of such activities, US funding for the IETF (under \$1,000,000) had already been spun off by the beginning of 1998. Thus, the various contracts with the IANA and NSI were among the last formal relations with the United States government that still chained directly from the Internet's origins as a Cold War-era, Pentagon-funded research project.

Despite the legacy of these sustaining ties to the US government, members of the IETF and other Internet standards making bodies have developed institutional practices which are highly independent of US control. The IETF motto stresses "rough consensus," traditionally implying that authority for the group's actions arises from within the group, rather than being imposed from outside agencies. CORE supporters have articulated sophisticated normative precepts that are fundamentally at odds with traditional conceptions of nation-state sovereignty, and they have openly derided the competence of many US officials involved in making Internet oversight policy. CORE ostensibly arose from a joint effort by ISOC and the IANA to design

a successor structure prepared to take over DNS operations after the expiration of the Cooperative Agreement with NSI. But it also reflects deliberate attempt by elite members of Internet community to act on an inchoate set of geopolitical precepts and wrest Internet governance from the hands of U.S. sponsorship. It was one of many attempts arising from within the Internet community to accelerate the construction of an expressly global medium for human interactivity.

All sides to the CORE controversy--including U.S. government officials and legislators--claimed to favor US divestiture from the Internet's management functions, leading to full privatization of DNS oversight and IANA's other activities. With few exceptions they spoke glowingly of the ultimate "internationalization" of the Internet. Despite these expressions of shared principles, however, the controversy was waged fiercely, focusing on the efforts to charter CORE as a non-competitive, non-profit "public trust" based outside the United States. CORE sputtered after the Clinton Administration intervened in late 1997 and early 1998 to reassert the power of the U.S. government over Internet policy making. The leading agent on behalf of the administration was Ira Magaziner, Senior Advisor to the President, a political ally who had worked closely with Hillary Clinton years before on the administration's health care proposal. Magaziner headed an interagency working group that included: J. Beckwith "Becky" Burr, Senior Internet Policy Advisor of the National Telecommunications and Information Agency (NTIA); Brian Kahin and Karen Rose. Magaziner's group initially deterred Postel from taking the steps necessary to implement CORE's plan, but after a long and notably open review of the issue, the interagency group produced a White Paper that conceded many critical points, and "punted" the problem to the "private sector," sending it effectively back into the hands of the IANA and the Internet Engineering community. This long episode deserves close attention for the issues it raised with regard to burgeoning interest in what is often called "global Internet governance."

The Mouvement's campaign to establish novel forms of operational and regulatory control over an expressly global infrastructure should be seen (at least in part) as presenting a challenge to forms of rule which stem from agreements between sovereign states. A review of this controversy can demonstrate how people might eventually acquire a sense that they are participants in a global society rather than subjects of an international one. It also provides insight into the ways contemporary technocratic elites are exploiting their standing as trusted professionals, engaging in social engineering under the rubric of machine making. And it reveals how the presuppositions of Western liberalism are being re-articulated in the so-called Information Age.

Although the Mouvement's leaders often spoke of "internationalization," they were in fact promoting an ambitious form of globalism, one that may eventually constitute the most sophisticated technical mechanism of social organization yet seen in human history. Their ambition can be made clearer by applying a *constructivist* analytical framework (Onuf 1989; Kubalkova, Onuf, and Kowert 1998), showing how the production of a related set of technical, managerial and commercial rules could have culminated in a coherent form of social rule--a set of socially conditioned influences through which people coordinate their everyday routines (Giddens 1984). All proponents of Internet expansion favor the growth of markets and other institutional practices which constructivists categorize as *heteronomy*. Leaders of the Mouvement had also developed an astute vision of how to establish forms of *hierarchy* appropriate to facilitating that end. The Mouvement's attempt to actualize that vision led to a battle which raised questions of *hegemony* over the Internet. The constructivist vocabulary and other pertinent conceptual issues will be addressed shortly. For now it is appropriate to

continue introducing the technical and historical background of the MoU dispute.

Evolution of the DNS

The DNS is the part of the Internet's architecture that links unique expressions--domain names--like *miami.edu* with underlying instantiated physical addresses--IP numbers--that read like 129.171.32.100. The current version of the Internet Protocol, IPv4, uses the formatting style *nnn.nnn.nnn.nnn*, also called the quadruple octet, or dot quad, allowing the numbers in each of its four sections to range between 0 and 255. This masks four octets of 2^8 for a maximum of 2^{32} , or nearly 4.3 billion possible addresses on the system.

Whereas IP numbers are absolutely essential to Internet operations, domain names are not. Still, the DNS provides a navigation mechanism which is so convenient and attractive, domain names have become nearly ubiquitous in global culture, and many people therefore consider the DNS to be an essential facility of the Internet. The DNS is employed for several reasons. Its method of identifying locations provides a reliable way for people familiar with the English alphabet to "surf" the Internet's popular World Wide Web service using names they can often easily guess or recall. The next planned upgrade of IP--version 6-- will contain 2^{128} (3.4×10^{38}) addresses, making the expression of IP numbers even more cumbersome. The DNS also greatly enhances the portability of the Internet's stored resources among its physical locations. As a consequence, the numeric address of a resource's "host" can change without altering the name of the destination that people rely upon to access it. This flexibility is highly useful for maintenance and other purposes. It permits a dynamism in the Internet's physical structure that can be hidden from account holders, and thereby greatly stabilizes the outward behavior of the system.

Host names were initially single words, like *ibm* or *usc*, resulting in e-mail addresses like *myaddress@thisplace*. By 1983, after about two thousand hosts had been connected to the Internet, it was clear that this flat addressing scheme was becoming unwieldy. Based on work initiated by Postel and Paul Mockapetris, it was slowly replaced by a hierarchical scheme requiring the use of Top Level Domain (TLD) suffixes like *.edu*, *.us*, *.uk* and *.gov* in conjunction with Second Level Domain (SLD) and optional Lesser Domain (LD) or 3rd Level Domain (3LD) identifiers listed as composites from right to left.⁽⁵⁾ This extensible domain hierarchy enables coexistence of location designations like *sis.miami.edu*, *law.miami.edu*, and even *foo.blah.miami.edu*. E-mail addresses therefore had to be reassigned to look like *myaddress@thisplace.net*. The goal was scalability--a design that would facilitate an easy and efficient distribution of names across the system as more names were added. The new scheme, fully instituted by 1986, reserved two letter endings for country codes like *.us* and *.ca.*, and designated seven three letter endings for prescribed purposes.

A partial restatement was published in March 1994 as RFC 1591, "Domain Name System Structure and Delegation" which declares, "The IANA is not in the business of deciding what is and what is not a country." For this, the IANA defers to a list known as ISO 3166, "Codes for the Representation of Names of Countries and their Subdivisions," published by the International Organization for Standards based in Geneva. Subdivisions like the Paris metropolitan area. *.fx* are allocated at the request of the state having authority over the area.

The 10 member committee which performs this work is the Berlin-based ISO 3166 Maintenance Agency (MA), includes 5 regular members from the UN Statistical Division (New York), UNCTAD/UNECE (shared vote/Geneva), IEAE (Vienna), UPU (Bern), and the ITU. The other 5 come from national standards bodies, currently the US (ANSI), UK (BSI), Germany (DIN), SIS (Sweden) and AFNOR (FRANCE). The MA re-evaluates the list as needed to comply with occasional changes in the UN Terminology Bulletin published by the General Assembly.⁽⁶⁾

RFC 1591 refers to the other top level domains as generic TLDs. Of these, *.mil* and *.gov* are exclusively controlled by agencies of the United States government--DARPA and the FNC respectively. The specialized zones *.edu* and *.int* are for educational institutions and international organizations. The remaining three zones, *.com*, *.net*, and *.org* were specified in turn for commercial areas, non-profit organizations, and network infrastructure providers, though NSI no longer takes steps to ensure that registrants fit into these categories. Mockapetris, Postel and others evidently hoped to see the rise of usages like *us.mycompany.com* and *uk.mycompany.com*, although this style of naming did not take hold in the commercial area. In fact, the burgeoning popularity of SLDs under *.com* resulted in a much flatter address space there than the DNS designers initially anticipated. Unsuspecting of the coming boom in demand for new generic TLDs, Postel wrote in RFC 1591, "It is extremely unlikely that any other TLDS will be created."

The earliest versions of the DNS relied on the distribution of a file called HOSTS.TXT, maintained by SRI and others, with revisions passed around the Internet almost daily. By the late 1980s, however, the increasing size of the file was a source of difficulties. Updating the source grew cumbersome, and questions arose as to who maintained the most accurate list of named hosts. Also, since the carrying capacity of the data "pipes" connecting the Internet's hosts was limited, the sheer size of the transmitted file made relatively heavy demands on the system's resources. An innovation by Mockapetris introduced in 1989 laid the foundation for an arrangement enabling the interoperation of an array of separate registries supported by a highly efficient and scalable distribution system.⁽⁷⁾ Consequently, the DNS has been called the largest distributed database in the world.(Cricket and Liu, Rony and Rony, Shaw).

NSI performs three important activities relevant to the DNS. First, it hosts the primary **root** of the Internet, located in a machine often referred to as Server A, but properly called a.root-servers.net. Server A is the authoritative guide to all of the DNS registries recognized by the IANA, as well as the SLDs hosted by NSI. It is the Internet's de facto arbiter of all requests through the DNS for IP addresses, but the root does not provide true directory services like a global "411" or "yellow pages." Server A is better described as providing indexed lookup table which serves to redirect domain name queries across the Internet as needed. A chief technical virtue of the contemporary DNS is that its index of names and numbers is distributed so that Server A will not have to field all requests directly. Several times a week NSI propagates an updated *zone file* from Server A to the secondary root name servers B through M in the US, England, Japan and Sweden. (J is also operated by NSI. B and L, by the IANA.) Tens of thousands of local name servers run by Internet Service Providers (ISPs) around the world point to those various root servers for domain name requests. Those machines store each successfully resolved domain name requests in a local memory *cache*, so that the more popular IP addresses can be distributed immediately by the nearest server the next time an identical query arrives.

There is no legal requirement that any ISP or other machine connected to the Internet must use the existing root system to resolve its DNS queries. However, the most popular software used by ISPs for DNS management--the Berkeley Internet Name Daemon (BIND)--is configured to work this way⁽⁸⁾. BIND is reconfigurable, but nearly all ISPs accept the defaults which point to the IP addresses of the known root servers. BIND is distributed free of charge by Paul Vixie, who is the predominant author of the most popular version. Vixie's company, the Internet Software Consortium (ISC), also operates server F.

Second, NSI maintains the **registry** database for the best known commercial TLDs--*.com*, *.net*, and *.org*--which together account for about 2 million names, nearly two thirds of the total number of names resolvable on the Internet as of April 1998. Other TLD registry databases are dispersed throughout the world, visible through the DNS only because they are listed in Server A. The IANA, at USC, officially provides registry services for *.us*, and many other national registries such as Canada's *.ca* are also maintained by academic institutions. This is changing with the Internet's rapid commercialization, however. For example, the German registry was transferred from the University at Karlsruhe to the Bundespost in the early 1990s. Many small or relatively poor countries have begun using technical contacts from the industrialized world to help them manage their national registries. British-based Netnames provides such services for Afghanistan (*.af*), .American Samoa (*.as*) Bhutan (*.bt*), Palau (*.pw*), and Turkmenistan (*.tm*) and others. A Paris-based company does the same for Burundi (*.bi*) Rwanda (*.rw*), the Republic of Congo (*.cg*), the Democratic Republic of Congo (formerly Zaire, *.cd*), and the Channel Islands Gurnsey (*.gg*) and Jersey (*.je*). Several sub-Saharan domains are managed by Randy Bush, the IESG Area Director for DNS issues. Bush was directly involved in building much of the Internet connectivity on the continent. Several national TLDs are considered to have been *leased*, implying that their technical contacts have wide latitude to exploit the global commercial opportunities of the domain name business. This is true of most of the TLDs managed by Netnames, as well as the Cocos Islands (*.cc*), the British Indian Ocean Territory (*.io*) and Niue (*.nu*). This occurred as the *.com* space became relatively saturated. "Good" names like *smith.com* were already taken, so the demand for service in new TLDs grew commensurately.

Third, NSI serves as a **registrar**, dealing directly with individuals who seek to acquire or transfer domain names. While a registry database--the zone file--typically only contains fields listing domain names and corresponding IP addresses, a registrar's database also contains contact information for the domain holder, the domain's technical and administrative contacts, plus other fields related to billing. Registry and registrar functions do not have to be housed under one roof as they now are at NSI. In the United Kingdom, for example, Nominet serves as a registry shared among several commercial registrars. The diverse array of registry and registrar services provided by Netnames can also be separated.

In the late 1980s and early 1990s, when there was little contention for domain names, SRI, and then NSI had provided *.com*, *.net*, *.org*, and *.edu* registrations free on demand, upholding the principle "first-come, first-served" (FCFS), and members of the then relatively small and elite Internet insiders club who knew where and what to ask could expect to see their registration requests completed in three days. In early 1994 the journalist Joshua Quittner took advantage of this policy and the general lack of knowledge about the domain names by registering *mcdonalds.com* and then announcing in a New York Times Op-Ed piece that the McDonald's Restaurant Corporation had missed its chance to secure the address. He later transferred the registration to the corporation in exchange for a \$10,000 charitable donation to an elementary school and continued to popularize the issue (and himself) by writing articles with names like

"The Great Domain Name Goldrush."⁽⁹⁾ This prompted a scramble for names as various entities became concerned about protecting their names and marks on the Internet. The surge in requests overtaxed NSI's facilities, leading to registration delays as long as eleven weeks. In September 1995, responding to the surge in requests for names, the NSF and NSI amended part 4 of the Cooperative Agreement, dropping the "cost plus fixed fee" provision of the contract, and instead permitting charges of \$35 per year for registration of SLDs ending in *.com*, *.net*, and *.org*. (names for educational institutions remained free). A \$15 surcharge was also levied on behalf of the US Information Infrastructure Fund. Since initial registrations were required to cover a two year period, the "price" of a name effectively jumped to \$100. Domain name registration quickly became a lucrative business for NSI, which invested heavily in advanced equipment and new employees. NSI now averages well over 4,000 new registrations every day, earning about \$8 million monthly

The institution of charges by NSI was a threshold event in the DNS crisis. Online discussions of domain policy and other Internet governance issues had been occurring in a variety of places such as the *com-priv* news list hosted by PSInet, a large provider of Internet backbone services. That list was not focused on DNS issues, but on the general question of Internet privatization. NSI also hosted several discussion lists where DNS governance issues frequently came up: *rs-talk* and *rs-info*, regarding the root servers, *domain-policy*, which was intended for discussion of NSI's dispute resolution procedures, and *namedroppers* which was more oriented toward technical concerns. Related discussions on the Usenet centered on the *comp.protocols.tcp-ip.domains* newsgroup. Critics of the revision charged that NSI's move was so significant, the entire contract should have been reopened to bidding. Personnel from NSI and NSF responded that the original agreement allowed for such changes.

NSI's critics also pointed out that its commercial policies had been growing considerably more aggressive after it was purchased in early 1995 by Science Applications International Corporation (SAIC), a prominent defense contractor with strong connections to retired officers of the Central Intelligence Agency and the National Security Council. (SAIC has also purchased other companies involved in number assignments such as telephone area codes and commercial bar codes.) On June 22, 1995 NSI it had unilaterally changed its policy regarding contested names, announcing that disputed names would be removed from Server A's zone file until the contesting parties resolved the matter through negotiation or litigation. This policy was soon revised so that the contested name could remain visible on the Internet if the name holder agreed to indemnify NSI. The policy was roundly criticized as unfriendly to domain holders. This issue, added to the complaints about registration delays, had simmered over the summer (Oppedahl, Rony and Rony).

The response to NSI's September announcement was immediate, including the formation of several new automated mailing list devoted to the issue. The initial conversation soon consolidated within *newdom*, a list sponsored by Mathew Marnell, a small business operator, under the auspices of the "International Internet Industrial Association" at *iiia.org* His inaugural message, titled, "So what shall we do?" on September 15 1995 read.

The way I see it is that NSI and NSF did a naughty thing by not including the general community in their decision. There are quite a few things that could be done I suppose. We could all try to hijack the root domains and point everything at each other instead of at the root servers. Not a good idea. We could all drop our *.com*, *.net*, *.org* domains and moving to geographical [sic] name space. Might force

the NIC to rethink its new policy. We might create some NewNIC for the express purpose of registering domains for domains that we as Internet users want. This would have to be funded somehow, and would have to be supported, but it would have to be a commercial entity. It would also have to compete with other people that get top level domains and register people that want them. Before posting to the list you may want to think about which domains you'd like to possibly have root level control over. Maybe someday you will, and maybe not, or you could think toward the a new NIC that lots of people can use.

As the ancient curse goes, "May you live in interesting times." We do. [\(10\)](#)

Marnell reiterated the Internet community's displeasure with NSI in a follow-up message that same day.

If [NSI] had at least put it before the community, then this may have all come about more slowly. But they dropped a bomb on us and now we're all scrambling for some solution.

Who does the most DNS out there? I'd say that the small to midsized ISPs still have the largest amount of domain name space. Maybe, I'm dreaming, but this chaos isn't so bad for any of us. The IANA and the NSF may have put a lot into the Net in the past, but money is the controlling factor now, and we can still vote with our dollars as well as with our hardware and software. I'm not advocating wrenching the root servers from their moorings and rewriting the Net, but we could be calling for 0 government control of the Net. Get their hands completely out of the honey pot. [\(11\)](#)

Jon Postel's reaction included the following comment, sent by e-mail to ISOC's board:

I think this introduction of charging by the Intenic [sic] for domain registrations is sufficient cause to take steps to set up a small number of alternate top level domains managed by other registration centers.

I'd like to see some competition between registration services to encourage good service at low prices. [\(12\)](#)

Most commenters advocated creating alternate TLDs and registries to compete against NSI, and a few, like Crystal Palace Networking even announced their plans to do so. Yet no consensus emerged on fair and proper procedures for awarding new TLDs to companies wishing to provide such service. Alternatively, Scott Bradner, head of the IAB and an ISOC board member, called for a major rethinking that would allow for a more scalable architecture based on shared registries. This would allow for an eventual introduction competition within the .com address space.

Discussion continued at a high pace, with the first draft proposal by Postel, Bradner, and Bush appearing on January 22 1996 under the name "Delegation of International Top Level Domains."⁽¹³⁾ It was filed with the other draft RFCs as "draft-ymkb-itld-admin-00.txt." This reflected the normal style for naming such documents, except for the letters "ymkb," which stood for "you must be kidding." An alternate proposal, "Top Level Domain Delegation Draft," by Karl Denninger was released days later, Jan 25.⁽¹⁴⁾ The primary difference between the approaches involved the question of assessing fees on new registries to provide funding for IANA and IETF activities. Denninger strongly opposed this. When the next major Postel draft emerged in March contemplating even higher fees, Denninger and his allies were outraged.

(This section will be reworked to follow the chronology and the draft language more closely.)

Before long, many more businesses were drawn to the scene, hoping to "cash in" by offering registrations with potentially popular suffixes like *.web*, *.arts*, *.xxx*, and others. NSI, protecting its monopoly over commercial registrations, refused to take the technical steps which would have made those new domains immediately visible throughout the entire Internet. The procedures would have been rather simple, amending the root as if another national registry had just gone online. The alternate registry operators cried foul, claiming they had been censored and subjected to unfair, anti-competitive practices. Critics accused NSI of restraint of trade, but no legal proceedings or official investigations were undertaken at that time.

In any case, the final authority, Postel, did not direct NSI to add the alternate TLDs to the root. As the IANA's first and only director, he had traditionally been responsible for accepting the "credentials" of any new national registry. That power was also vested in the IANA by the Cooperative Agreement, which stated that NSI's services were to be provided in accordance with the IETF standard stipulating the IANA's "discretionary authority to delegate [responsibility] with respect to numeric network and autonomous system identifiers."⁽¹⁵⁾

Like many Internet veterans, Postel was wary of the way NSI had engineered a financial windfall for itself through its monopoly of commercial TLDs. Yet he hesitated to subject the DNS to a potentially stressful infusion of new commercial TLDs. No one really knew how many the Internet could support beyond the 180 or so then in the system (ISO 3166 country codes still take the lion's share). It was technically feasible to add millions of TLDs in Server A's index, but practical human issues of how to manage the entries kept estimates in the low thousands. The reluctance to open up the TLD space on a first come, first served basis was fortified when it was learned that some of the aspiring commercial registry operators had also engaged in a disreputable, predatory practice known as "cybersquatting"--registering a number of desirable SLDs like *nike.com*, and then reselling them at premium prices.⁽¹⁶⁾ Some observers estimate that over 15 percent of the SLD names currently registered under *.com* are held by speculators. One prospective TLD registry operator, ophthalmologist Stephen Page, even claimed the entire alphabet of single characters--*a* though *.z*--indicating that a "land rush" was now imminent for TLDs as well. (Mouvement critics have pointed out that Paul Vixie's ISC was partly funded through the lucrative sale of names like *tv.com* and *radio.com*).

It fell on Postel's shoulders to maintain order and establish a clear policy. He is not only the primary investigator under DARPA's grant, making him the official keeper of all "unique

parameter values" for the Internet engineering community, he is an *eminence grise* among the community's "greybeards," present at the creation of the very first ARPANET connection between UCLA and the Stanford Research Institute in 1969, out of which the NSFnet and later the Internet evolved. During the September 1997 Congressional hearings on the DNS controversy, Postel described how his role in the early ARPANET experiments evolved into a job of pivotal significance.

Communication of data between computers required the creation of certain rules ("protocols") to interpret and to format the data. These protocols had multiple fields. Certain conventions were developed which would define the meaning of a particular symbol used in a particular field within a protocol.

Collectively the set of conventions are the "protocol parameters." In a project like the ARPANET with the developers spread across the country, it was necessary to have coordination in assigning meaning to these protocol parameters and keeping track of what they meant. I took on the task of doing that. (Pickering 1997)

Postel was more interested in work on high speed, high performance computing, and this volunteer drudge work initially occupied only a small portion of his responsibilities. Over the years he nevertheless settled into the position as the Internet's "numbers czar" (at first a term of endearment), and the IETF's esteemed RFC Editor, publishing technical standards, records of best current practices, informational statements, and even some April Fool's Day pranks. He has written or co-authored a substantial number of important RFCs, and is also a member of ISOC's board of trustees. His long tenure in such a technically-focused management position kept him in firmly within the Internet community's leadership circles, but without requiring him to play a partisan role in the debates and deal making that escalated as the Internet grew. According to another Internet veteran, MCI's John Klensin, "Postel doesn't like controversies, and that has turned out to be a big asset to the Internet." Postel's gifts for succinct, accurate communication and a generally low key demeanor also served him well for many years. Yet these strengths were insufficient to the complicated challenge of creating a DNS structure that was both technically viable and commercially competitive. Settling on a technical standard is quite different from creating markets in which behaviors and outcomes are by nature unsettling.

Ending NSI's monopoly was central to the task. He underscored that approach in the following way: "What are the priorities here? My list is: 1. Introduce competition in the domain name registry business. 2. Everything else."⁽¹⁷⁾ He began with tried and true Internet engineering techniques, participating in dialogues on public lists like *newdom*, and inviting comments by uploading drafts of his proposals to the Internet. Such drafts are normally treated as works-in-progress, designed to promote response and revision, with no official status. But consensus was elusive, the arguments grew unusually heated, and polarization resulted. A strong cohort believed that it had been a mistake to create commercial TLDs in the first place. Within this group, one faction wanted all commercial names to revert to country codes, in the form *mycompany.com.us*. Another faction favored slotting all commercial registrations into a new category of special TLD (sTLD) equivalent to the 37 business categories recognized by the International Trademark Association (INTA). Some argued that it was necessary to ensure that domain names would only be provided to entities which could prove they were legally constituted and accountable under a sovereign jurisdiction.

There were calls for imposing waiting periods between application and final authorization of names of up sixty days, during which trademark searches and challenges could be conducted. These and other restrictions were proposed expressly to ensure the rights of trademark holders. Conversely, others believed that domain names should be treated as no more than a manifestation of free speech, and that nothing should be done to impede someone from creating names like *i-hate-thatcompany.com*. According to this view, there was no need to structure DNS policy to provide relief in cyberspace for trademark holders; the laws of meatspace were already sufficient. There were discussions of new technologies like globally shared registries (which Postel initially doubted was feasible), and futuristic directory services that would someday make the DNS obsolete. There was also running commentary that also included incessant criticism of NSI, the normal share of philosophical bantering, an excess of noisy chatter submitted by class clowns or people of dubious mental health, and the inevitable Internet "flame wars."

Contentious new entrants were beginning to create very difficult problems, and not only on the e-mail lists. Some of them had already set up shop as unauthorized TLD registries and were accepting payments for domain names. The best known of these, AlterNIC, run by Eugene Kashpureff, began service on April 1, 1996 with the TLDs *.xxx*, *.nic*, *.med*, *.ltd*, *.lnx*, and *.exp*.⁽¹⁸⁾ A small portion of the name server operators on the Internet, perhaps around 2 percent at the height of their influence,⁽¹⁹⁾ had reconfigured their software, improvising their way around NSI's root, and making the alternate TLDs visible among themselves. The potential for this type of behavior had always been known, and a vocal minority of Internet veterans with a strong predisposition toward free markets applauded the improvisations. Others hissed. No laws were being broken, but most members of the Internet's "old guard" believed this presented a clear peril to the integrity of the DNS. An ability to sidestep the legacy root violated the rule of uniqueness that underpinned a unified and reliable addressing system. This turn of events threatened to pollute the name space with incoherence, and fragment the community, raising the nightmarish prospect that people would soon have to ask "which Internet?" when using various e-mail and web page addresses.

Postel's options under these circumstances were highly restricted, especially by the risk of committing an anti-trust violation. He well understood that it would have been illegal under US law to "bless" any particular company without undertaking a formal process of open contract bidding. Moreover, IETF procedures insist on market neutrality, forbidding the adoption of standards which are proprietary or encumbered by patent royalty obligations. This supposedly increases the value of the IETF's imprimatur and reduces the legal risk of embroiling its members in anti-competitive practices.

In June 1996 Postel gave ISOC's board a new draft document named "New Registries and the Delegation of International Top Level Domains,"⁽²⁰⁾ proposing a framework that would be used to add 150 new iTLDs (international TLDs) into the root. 50 new registrars would each be assigned up to 3 TLDs, presumably to promote competition through economies of scale equivalent to the three commercial TLDs held by NSI. The proposal was particularly careful to stipulate that new registries must indemnify ISOC and IANA against any trademark infringement proceedings undertaken as result of action by the new registries or their clients. The motivation for this was that NSI's own terms of service regarding trademark policies were being attacked vociferously for undermining the first-come first-served principle and free speech. (Oppedahl 1996, Mueller 1996). The trademark problem was vexing, raising a host of complex technical and jurisdictional issues, and contributing to the induction of a whole new field of legal scholarship and case law often called cyberlaw (Kahin and Nesson 1997). NSI's

dispute policy, initiated in June 1995, displayed great fear of liability in trademark dilution or infringement suits, and resulted in many names in *.com*, *.net*, and *.org* being put "on hold"-- removed from the root zone. NSI does not report these domain name disputes, leaving many unanswered questions about how widely and how consistently its policies have been applied (However, see Mueller forthcoming). It is known that NSI nearly withdrew the registration of *juno.com* because of a trademark complaint by a company in a different business category. This single move would have wiped out the Internet addresses of hundreds of thousands of people who use Juno's free e-mail service, even though the owners of *juno.com* would not have been guilty of trademark infringement under normal circumstances. A rising chorus of critics deemed NSI's behavior hasty, vague, and excessively prejudicial on behalf of trademark holders.

The indemnification provision in Postel's draft was coupled with a request that ISOC fund a committee that would study the trademark dispute resolution issues and develop guidelines for an organization that would handle the assignment of iTLDs to new registries. ISOC's board accepted the idea, requesting that he flesh it out with a business plan for the committee's work.

The effort to solve the TLD problem was soon linked to another pressing issue. Since early 1995, aware that DARPA funding would eventually be withdrawn, Postel had been suggesting ways that closer formal ties with ISOC could assist in generating alternate sources of revenue for the IANA. These ties would be used to help legitimize some sort of fee schedule for the number and parameter assignments the IANA had been performing for the Internet community without charge. His first two drafts raised the prospect that new commercial TLD registries pay a fee to IANA prior to inclusion in the root. He initially suggested a \$100,000 fee, which raised a hue and cry, so he reduced the suggestion to \$2,000. The idea of paying such fees divided the alternate registries. One group viscerally opposed such a tax, and resented the idea that they should be subject to Postel's authority. The other was ready to invest what was needed to get in on the "ground floor" of the registry business.

The next step was to try to develop registry evaluation procedures. The IANA's attempt to do this in the summer of 1996 through direct consultation with aspiring alternate TLD operators like Simon Higgs and Christopher Ambler of IODesign only worsened the acrimony, raising charges of favoritism. Alternate registries like Kashpureff's AlterNIC and Karl Denninger's MCSnet participated in a simultaneous counter meeting called by Iperdome's Jay Fenello in Atlanta, where they hoped to establish a confederation they called eDNS (e standing for enhanced). In any case, the meeting with IANA's representative on July 31, 1996 turned out disastrously. Its everlasting legacy is a hotly disputed tale of the attempt by Ambler to get immediate authorization to go online with his registry, *.web*. Ambler gave Bill Manning, an IANA employee, an "application" which included an envelope containing a \$1,000 check (Cook 1996; Stark 1997). The envelope was returned unopened the next day, and on August 2 Postel issued statements that no commercial TLD registrations were being accepted. But the damage was done. Things looked sloppy. Though the majority of the community remained deeply loyal to Postel, his once unassailable reputation had been sullied. Ambler proceeded to accept registration payments and offer service in *.web* as an "experimental" TLD, and moved closer to the Alternate camp.

Other events of import were taking place around the same time. Increasing interest in the Internet and the DNS issue had prompted the convocation of various panels and policy

conferences on the topic, primarily in the US and Europe. A June 1996 meeting sponsored by the Organization for Economic Cooperation and Development (OECD) in Dublin, brought together Don Heath, ISOC's recently-hired CEO, Robert Shaw, the ITU's advisor on the Global Information Infrastructure, Albert Trampusch of the World Intellectual Property Association (WIPO), and David Maher, an intellectual property attorney. Maher was affiliated with the New York-based INTA, and was slated to present a paper on the issue at ISOC's annual Conference, INET, the next week in Montreal. He had expedited the widely-reported transfer of *macdonalds.com* from journalist Joshua Quittner, and had also been participating in the *newdom* discussions since January. This began a process of idea exchanges that continued at OECD workshops that summer in Geneva, and in September at a conference hosted by the Harvard Science and Technology Program's Information Infrastructure Project (the conference produced a book: Kahin and Keller 1997). Throughout these meetings, Shaw was outspoken in his opposition to Postel's plan, arguing it would only set up a series of mini-monopolies, replicating the existing problem of subjecting registrants to "lock in" by predatory registries, while making a unified dispute resolution policy even harder to implement. Shaw was not a veteran Internet "insider," but had acquired a well-informed technical background during his years running the ITU's internal networks, and he contributed a substantive overview of DNS management at the Harvard conference (Shaw 1997). Heath was eventually influenced by Shaw's arguments, and finally began calling for a "blue ribbon" panel of experts to rethink the issue. By September 1996, Postel's proposals had been refined to take a more conservative approach, such as starting with thirty new iTLDs building up next to one hundred twenty, and then three hundred. Like NSI, these would operate as combined registry/registrars. Postel also published lists of the new suffixes that were being proposed, though he made no comment regarding which of them might be given priority.

One of the chief organizers of the Harvard Conference, Brian Kahin, was both a professional academician and a quasi-officer of the U.S. government, working simultaneously as Lecturer at Harvard's Kennedy School while also chairing the Working Group on Intellectual Property, Interoperability, and Standards of the U.S. Advisory Committee on International Communications and Information Policy. That committee reported to the U.S. State Department and was primarily concerned with copyright issues, so DNS questions were of great interest to its members. After the conference, September 23 1996, Kahin wrote to the co-chairs of the FNC asking them to clarify whether the U.S. government had any claim to ownership over 1) the IP address space; 2) the *.com .net* and *.org* TLDs, and; 3) the root.

When the FNC Advisory Council met in Washington the next month, October 21-22, DNS issues were a high priority. The report requested by Kahin had not yet been completed, but the attendees nevertheless dealt with DNS issues at length, and passed the following resolution: "The FNCAC reiterates and underscores the urgency of transferring responsibility for supporting U.S. commercial interests in iTLD administration from the NSF to an appropriate entity."⁽²¹⁾ The FNC was also monitoring ISOC's activity. In early October Heath had floated a plan to create a study group called the International Ad Hoc Committee (IAHC). Official public word of the IAHC came on October 22, in an ISOC press release declaring an intention to appoint a nine member panel to "resolve controversy . . . resulting from current international debate over a proposal to establish global registries and additional international Top Level Domain names (iTLDs)"⁽²²⁾ The FNC requested a seat at the table on that same day. According to the minutes: "While not endorsing the [Postel/ISOC] RFC, FNCAC members urged NSF and the FNC to seek membership on this advisory committee, in recognition of the government's historic stewardship role in this sector."⁽²³⁾

Pressure to act was increasing. Little real progress had been made in the past year and the impending expiration of the Cooperative Agreement was now less than 18 months away. Paul Vixie was growing impatient and was pushing hard for a solution.(Stark 1997). He is a force to be reckoned with as a result of his outstanding technical contributions in BIND and elsewhere, a selectively strategic willingness to engage in controversy (he is a celebrated opponent of unsolicited commercial email), and a deep loyalty to Postel. On October 31, 1996, concerned that the momentum would be lost in another round of online drafts and argumentation, he wrote to the main IETF mail list under the heading "requirements for participation:"

I have told the IANA and I have told InterNIC -- now I'll tell you kind folks.

If IANA's proposal stagnates past January 15, 1997, without obvious progress and actual registries being licensed or in the process of being licensed, I will declare the cause lost. At that point it will be up to a consortium of Internet providers, probably through CIX [the Commercial Internet Exchange, an ISP trade association] if I can convince them to take up this cause, to tell me what I ought to put into the "root.cache" file that I ship with BIND.[\(24\)](#)

The next public step was taken on November 12, when eleven (rather than nine) IAHC panel members were announced. Under the October announcement, IANA, ISOC, and the Internet Architecture Board (IAB) were each allowed two appointments. (The IAB is a body of Internet luminaries that offers direction to the IETF and is available as an appeal body to settle disputes in case anyone claims that the IETF's standards making procedures had been violated.) Postel's two selections were IETF members who had been extremely active and often highly disputatious in the e-mail lists associated with the DNS controversy. Dave Crocker had worked directly under Postel years before, and had also been an IESG Area Director (AD) for DNS concerns. Crocker heads the Internet Mail Consortium and is particularly involved in Internet faxing technology. He also has a name that is "famous" in the technical community, since his brother Steve is one of the most prominent Internet engineering "founding fathers," and had authored, among other things, the very first RFC in 1969. In his writings, Dave Crocker had been consistently outspoken on the theme of how the Internet must address the interests of people outside the United States. Postel's other appointment was Perry Metzger, the youngest member of the panel, a security specialist who had chaired the IETF's working group on Simple Public Key Infrastructure (PKI) and an outspoken voice on the *newdom* list since its inception. Since it was likely that some sort of public key technology would be used to authenticate DNS registrations, his expertise seemed desirable. Metzger is also a effusive advocate of the Libertarian Party, and a loud critic of the U.S. government's restrictions on the export of software products which employ strong encryption algorithms.

Heath's selections for ISOC were David Maher and Jun Murai. Maher had relatively limited practical knowledge of the details of Internet engineering, but his background included a stint as counsel to the American Bar Association on telecommunications matters. His efforts to assimilate into the Internet's culture included attending an IETF meeting wearing a T-shirt touting the PGP encryption format. PGP had been a famous bone of contention between techno-libertarians and the U.S. government, so this was a graceful and astute move to overcome the antipathy that many of the engineers held toward lawyers, especially those who served the trademark industry. Murai was an ISOC board member and a computer scientist who had played a significant part in building his country's Internet infrastructures. The IAB's

appointments were Hank Nussbacher, an Israeli-based engineer who had been highly instrumental in building IBM's presence as an ISP there, and Geoff Huston, founder and President of Telstra, the leading ISP in Australia. Huston was also an ISOC Board member and served as its Treasurer. The IAB had initially sought to appoint Simon Higgs, recognizing his early and active participation in the discussions, but he wavered. As the first TLD applicant in September 1995 (for .NEWS), he believed there would be a conflict of interest. One of Postel's initial choices, Christopher Ambler, had declined for the same reason

Single appointments were granted to the ITU which selected Robert Shaw, the WIPO which selected Albert Trampusch, and the INTA which selected Sally Abel, an attorney. At the behest of the FNC, Heath added George Strawn, the FNC co-chair from the NSF. (It may be worth noting here that NSF funding and oversight had been so critical to the Internet over the years, that some IETF insiders called it "daddy.") Having an officer of a U.S. agency on the panel added an aura of stature and legitimacy to the IAHC. Heath became chair, resulting in an eleven member panel. Heath later stated that he had also wanted to add Barbara Dooley of the Commercial Internet Exchange (CIX) and industry lobbying group, but that this was resisted by Crocker.

The IAHC conducted its deliberations in a manner far unlike what is normally seen in ISOC or the IETF. Work took place in closed session with a staff counsel present, and participants kept no official minutes or other formal record of their meetings. What is known of the debates within the IAHC has been reconstructed through follow on conversations and interviews; the main elements of the following discussion are generally known and unsurprising. Postel's series of drafts promoting the creation of countervailing registry/registrar entities like NSI was put aside in favor of Shaw's concept of a centralized non-profit registry fed by a globally dispersed network of commercial registrars. Much of the IAHC's time was spent drafting a document that would be used to constitute the appropriate formal organizational arrangements, and designing procedures which would be used to select the registry database operator (DBO) and vet the registrars. The first draft, issued December 19 plan called for soliciting applications from around the world, requiring that registrars provide evidence of capitalization, insurance, creditworthiness, and number of employees. These applications would be audited by the New York accounting firm Arthur Anderson. A lottery would then be used to determine which of the applicants would be accepted, under the restriction that there would be four registrars in each of seven global regions designated by the World Trade Organization: North America; Latin America; Western Europe, Central and Eastern Europe, the Baltic States and the Commonwealth of Independent States; Africa; the Middle East, and; Asia⁽²⁵⁾

The new registry's computer would be designed to provide expedited access to outside trademark authorities in order to speed up searches for specific strings of characters that might indicate the existence of potential trademark conflicts. There would also be a sixty day waiting period on the registration of new names. Though many of these provisions clearly served the interests of the trademark community, the plan also satisfied the minimum demands of the Internet community. It constituted a mechanism that could serve to take possession of the NSI registry and introduce competitive practices into the registration business when the Cooperative Agreement expired. NSI would be allowed (even encouraged) to participate in CORE as a registrar, and with a tremendous head start in name recognition, but would lose its monopoly advantage.

(This section needs considerable elaboration, refinement, and correction)

The last IAHC session in mid December dealt with the question of adding new TLDs. By now the IAHC had determined to use the term gTLD (for generic, and hinting at global) instead of international TLDs. According to Dave Crocker, trademark interests in the group wanted a "go slow" approach, with no new TLDs added at all. There was powerful motivation for this. In a proactively defensive move, many owners of "famous names" like Tupperware had embarked on a policy of registering in alternate TLDs, whether or not those registries had any visibility. This was to ensure that no cybersquatter could get the name first, and hold it hostage if that registry was later added to the root. Rather than enrich a proliferating number of zone operators and squatters, the trademark industry preferred to solve the question of dispute resolution in the existing TLDs, and avoid the complexity of dealing with new ones. Crocker and Metzger backed down from Postel's recommended first wave of thirty, and the group chose the number seven as a compromise. With Crocker standing at the whiteboard, they settled on *.arts*, *.firm*, *.info*, *.nom*, *.rec*, *.store*, and *.web*. Crocker then asked the four attorneys in the room if the IAHC should be concerned with challenges from IODesign regarding any potential conflict with *.web*. He was advised that the company had no legal standing. Since Crocker had so insistently called IODesign's registry a "pirate" TLD during the preceding months, he was unlikely to be deterred by any other argument about the need to avoid conflict. Crocker later said he was unaware of the existence of the alternative *.arts* registry run by the Canadian company, Skynet. This was a fateful decision, akin to driving a car through an intersection when you are sure you have right of way, despite seeing another vehicle in your path.

In the IAHC's preliminary report issued December 17, 1996, no mention was made of any additional gTLDs that might be introduced further down the line. This strengthened the impression among the IAHC's increasingly infuriated critics that trademark interests had dominated the process, easing the ability of global brands to defend their names in a highly constrained TLD space. The IAHC's Final Report, issued on February 4, 1997, spelled out the parameters of the new DNS institutional and policy framework. The registrars in CORE would be required to pay a \$20,000 entry fee (only \$10,000 in less developed regions of the world) plus \$2,000 per month, plus whatever fee would ultimately be charged per registration once the system went into operation. CORE would be incorporated as a non-profit organization in Geneva, overseen by a Policy Oversight Committee (POC) made up by nine members identical in composition to the initial plan for the IAHC--two appointments from ISOC, IANA, and the IAB, plus one each from the INTA, WIPO, and the ITU. Disputes between registrants and trademark holders would be arbitrated by a new structure called Administrative Challenge Panels (ACPs), organized through WIPO's Mediation and Arbitration Board. The ACP model was evidently drawn from countries like Sweden where litigation is relatively uncommon in trademark dispute resolution. Finally, all signers of the gTLD-MoU could participate in a Public Advisory Board (PAB), which would monitor the POC. Participating registrars would have to sign a separate CORE-MoU. The ITU would serve as a depository for both documents. IAHC members expected that CORE would be ready to start service by the end of the year, but a crash effort would be needed to create and test the Shared Registry System (SRS) software on which everything depended.

The gTLD-MoU was signed on March 1, 1997 by Heath and Postel, acting for ISOC and IANA respectively. Heath then began working with the ITU to organize a signing ceremony in Geneva at the end of April. That ceremony was critical to the ambition of making the MoU a *fait accomplis*. The more varied and independent support that could be enlisted into the PAB, the more legitimacy CORE could claim. In the interim, various IAHC members, especially Crocker, undertook a globe-trotting public relations campaign to promote the new system.

Amendments and adjustments began to appear nearly right away. Howls of protest led to elimination of the 60 day wait. Complaints from the European Commission led to the end of the 28 registrar limit, thus allowing reduction in the entry fees to \$10,000. IODesign's Christopher Ambler, who was by then employed by Microsoft, sued the IAHC, Postel and others, claiming his company had prior claim to *.web*. He dropped the complaint before a final ruling was issued, but the judge added a statement highly favorable to the IANA's position. Most observers conclude that the court was ready to dismiss the suit, so, by withdrawing the complaint "without prejudice," IODesign retained the right to sue again elsewhere another time. This demoralizing outcome left the alternate registries more divided and in a far weaker position than they had been a year before; an effort to meet in Atlanta and revive their confederation was poorly attended.

In late March 1997, at the IETF meeting in Memphis (which is where I first encountered this issue), the "buzz" was that the MoU was designed to satisfy the interests of "big business" interests like MCI, DEC, AT&T, IBM, and UUNET that wanted assurances about the stability of DNS management. If those key Internet functions were to be moved from NSI, they would have to be transferred to a group made up by accountable professionals, rather than a diverse group of overworked volunteers, neophyte graduate students, or ramshackle entrepreneurs. Most IETF members were willing to defer to Postel, Vixie, and the other DNS "wonks" who endorsed the plan. Technical viability was the primary concern, and the SRS was now said to be "do-able." It was left up to the implementors to go do their thing. Most people involved in the IETF's standards making process had learned over the years to accept compromises that were aimed at reducing dissatisfaction by moving forward on "rough consensus," rather than wasting time trying to completely eliminate all complaints and misgivings. This made it easier to get on with more interesting new ideas. Technologically, TLD questions had become rather stale. That part of the DNS was now a policy matter, officially outside the IETF's purview.

In the closing days of April the US State Department leaked a memo from Madeline Albright expressing "concerns" about the ITU Secretariat acting "without authorization of member governments" to hold "a global meeting involving an unauthorized expenditure of resources and concluding with a quote international agreement unquote."⁽²⁶⁾ The signing ceremony hosted by the ITU in Geneva on April 29, 1997 failed to generate a groundswell of support that would indicate the MoU had forged the desired level of consensus among Internet stakeholders. ISPs and prospective registrars were slow to join the plan. The only nation-state to sign on was Albania. PSINet, which had initially supported the IAHC, denounced the MoU and called for a global Internet convention with Vice President Al Gore as moderator. Undaunted, the IAHC reconstituted itself as the Interim Policy Oversight Committee (iPOC) which was to manage further institution building processes until mid-October, 1997, when a formally selected POC would begin its term of office.

Diplomatic tensions were smoothed over at the annual convocation of the ITU Council in late June. Some member states publicly "regretted" the short notice given regarding the April signing, while others praised Secretary General Pekka Tarjanne for his initiative. The Council Chair, Argentina's Maricio Bossa, was tasked with "carrying out an inquiry into the substance of the MoU and the ITU's role." The US delegate, Richard Baeird was reported to have had strong misgivings about the MoU, but in public announced that even though the US had not endorsed any plan, "the momentum of the April meeting should not be lost."⁽²⁷⁾

The undying controversy and a mounting anti-MoU lobbying campaign supported by NSI

raised the attention of the Clinton Administration. The first comprehensive attempt by the White House to deal with issue was presented in a paper by Karen Rose, a domestic policy advisor. This alerted other administration officials to a wide range of related technical resources over which Postel exercised authority. J. Beckwith "Becky" Burr (formerly of the Office of Science and Technology Policy), and Brian Kahin became particularly concerned with a new plan developed between the IANA and NSI for the allocation of IP addresses. NSI was hoping to divest itself of the IP number assignment business by constituting a new organization called the American Registry for Internet Numbers (ARIN). Many participants in the DNS controversy considered this to be a separable issue, but Burr and Kahin believed they were inherently connected.

The redelegation of authority for allocating large blocks of these critical and finite resources had been progressing in manner far less controversial than the DNS debates, though the issue was arguably much more significant. It is common to think of radio spectrum as a good analogy for IP allocation, especially amid rising awareness of the increasing scarcity of large IP blocks. The U.S. Federal Communications Commission has been selling rights to exclusive control over spectrum at auction, but the NSF was demanding nothing for the IP blocks, even though U.S. government grants had led to the creation of that resource. The disbursed IP blocks had great potential value as a private asset, and quick availability was critical to businesses planning for rapid growth. The power to allocate those resources implied great influence over markets. Randy Bush argued that management of the IP space should be treated as a stewardship and not as a business. Rather than putting the blocks up for auction, the various number registries should only charge fees sufficient to maintain their continued administrative capacities. ARIN, with Postel and Bush as board members, was to be modeled after the Asia Pacific Network Information Center (APNIC) and the Réseaux IP Européens Network Coordination Center (European IP Network--RIPE NCC) to which Postel had already delegated large blocks of address space. ARIN would also control IN.ADDR.ARPA, a significant technical feature of the DNS that was not itself the subject to much controversy and was therefore deemed appropriate to link with the numbers registry. The most vocal opposition to the ARIN/APNIC/RIPE framework emanated from Jim Fleming, an irrepressible gadfly who was pushing a variety of radical technical proposals that did not conform to the IETF standards process. Burr and Kahin were able to delay the remaining transfer to ARIN while they acquainted themselves with the details, but they were derided as poorly informed interlopers by Gordon Cook, a prominent Internet journalist who seemed to harbor particular disdain for Burr.⁽²⁸⁾ The escalating controversy drew in Ira Magaziner, the senior White House advisor for Internet affairs. He had been preoccupied since the beginning of the year with developing the administration's "Framework for Electronic Commerce" which was announced on July 1, 1997.⁽²⁹⁾ This freed him to focus on DNS issues.

Events began to accelerate as players jockeyed for position. NSI announced an Initial Public Offering of stock shares which raised about \$50 million in capital for future investment and acquisitions. In a fit of pique, Alternic's Eugene Kashpureff exploited a bug in the DNS that allowed him to divert traffic from NSI's InterNIC website to his own, where the captured websurfer would encounter a written protest and a working link back to the InterNIC site. NSI was not eager to publicize the weaknesses of the DNS, or NSI's own security, but after a second event, the company filed a restraining order. Now a mini-celebrity, Kashpureff claimed he had discovered how to black out entire countries from the Internet. He mellowed, however, when the U.S. government opened investigations into wire fraud, and his actions were denounced throughout the technical community as an irresponsible disgrace. Vixie and many others were already angry with him for trying to fragment the root. With this act of unabashed arrogance, he had crossed the line, stealing time from thousands of unsuspecting people, and

undermining the "running code" of the DNS. A once sympathetic journalist, Ken Cukier of *Telecommunications Week*, sent him a message, "Eugene, Nice hack. You asshole!"⁽³⁰⁾ Learning contrition, Kashpureff publicly apologized to NSI and the Internet community, and promised to assist NSI plug its security holes.⁽³¹⁾

Also in July, the U.S. government initiated a Notice of Inquiry (NOI), administered by the Department of Commerce's National Telecommunications and Information Administration (NTIA). The primary thrust was to solicit public comment on the expiration of the Cooperative Agreement. The NOI accepted hundreds of E-mailed submissions through mid-August.⁽³²⁾ As would be expected, many of the comments revealed the material interests of the individual or group making the submission, but many also carried a rather grandiose and idealistic perspective. The concept of creating a new structure for global Internet governance was motivating serious flights of fancy, like the following proposal for the opening an Internet Constitution offered by an otherwise staid commercial association:

We the People of the Internet Community, in order to promote more complete interoperability of the individual Networks that constitute the Internet, insure harmonious relations between the various Networks that constitute the Internet, and to secure the Blessings of Liberty to all the Networks that constitute the Internet, do ordain and establish this Constitution for the Agency for Internet Names and Numbers (AINN).⁽³³⁾

An Open Internet Congress was held in Washington, DC that summer along a similar theme, though it was actually a poorly attended front for an NSI lobbying effort focused on denouncing the MoU. Partisans to the controversy continued berating each other online, and even met during the IETF meeting in Munich that summer, but were unable to settle anything. NetNames, a leader in the Mouvement, tried to promote its own conference to reconcile the warring parties, but NSI refused to attend. IODesign offered several times to sell itself to CORE and was rebuffed. All the while, new registrars were signing up to join CORE. Some, like British-based NetNames had years of experience providing registrar services and assisting clients with the peculiar complexities of other national registries around the world. Reputable applicants also included Mindspring, a large American ISP which sought to become a registrar as a way of adding value to its hosting services. But other prospective registrars had little if any background, suggesting that quick buck artists had entered the process and might corrupt it. The MoU had initially stipulated that no registrar should accept pre-registrations from clients, but some had done so anyway, demanding payment for names that were not expected to be visible on the Internet for months. That stipulation was removed so that no registrar would be placed in a disadvantage in relation to the others. In addition, a computerized round robin registration process was designed, so that when CORE went online, each of the registrars would submit names one at a time in turn, until their queues were exhausted. Opportunists exploited this rule by selling priority positions in their queues for non-refundable fees reaching thousands of dollars. Crocker dismissed the sleaze as the inevitable result of creating an open market for registrars. *Caveat emptor*. He found something positive in that: This supposedly proved that POC was impartial, and had not exerted biased influence over the registrar selection process.

Members of the U.S. House and Senate started showing interest by the autumn. Over two days of hearings, during the first live Internet "webcast" from Congress, Postel, Heath and others

answered questions about the DNS, CORE and the official expiration of the Cooperative Agreement, now only six months away. Speaking under oath on September 30, 1997, Postel was treated with respectful deference. The witnesses were not sworn on the next day of hearings October 2, however, which prompted a considerably harsher exchange. Andy Sernovitz, the vehemently anti-MoU lobbyist who had organized the Open Internet Congress that summer relentlessly denounced CORE, referring to it as a conspiratorial "Swiss cartel" that was engaged in a "power grab" to "take over" the Internet. During a recess he engineered the release of a report that NetNames had been doing business with Libyan government, hosting the Libyan TLD *.ly*, and assisting Western companies register within that zone. This prompted a sensational furor when testimony resumed, and Heath was ill-prepared to respond. It was later confirmed that no laws were being broken, but Sernovitz had succeeded in tainting CORE with the image of Moammar Khaddafy. NetNames, frightened by the American nativists, stopped providing service for Libya. Its U.S. offices, incidentally, had always been instructed to refuse to provide registration services for Cuba, North Korea, Iran, Iraq, and Myanmar. Sernovitz's nationalistic appeals started to resonate with some the committee members, prompting the Chair, Mississippi's Charles Pickering, to insist that registrations in *.com* should be restricted to U.S. citizens. Heath was caught off guard by the ferocity of the attacks that day, and was unable to mount an effective response, other than stressing that the U.S. government's continuing delay would impede the growth of the Internet.

(A number of significant events occurred in the last months of 1997 and the beginning of 1998. They are abbreviated here.)

The Pickering hearings bolstered CORE's opponents, who redoubled their efforts to influence Ira Magaziner. In mid-October the Senate Judiciary committee held hearings focusing specifically on the trademark issue. At the end of the month, Kashpureff left the U.S. to work in Toronto, causing the FBI to suspect he was fleeing possible prosecution for wire fraud. He was arrested by the Mounties, and was held in a Canadian jail there until extradition just before Christmas. The Mouvement continued to formalize its structures, electing David Maher to head POC, and two Internet engineering veterans, Alan Hanson, and Kent Crispin, to head CORE and PAB. The opening round of CORE registrar applications included 89 companies from over a dozen countries. The NTIA report responding to the public comments submitted during the summer was initially due in early November, but was repeatedly postponed as Magaziner, Kahin and Burr continued their consultations with Internet "stakeholders" in Washington and in meetings around the world. That report was finally presented as a Notice of Proposed Rulemaking (NPRM), released in draft form online on January 28, 1998 and published in the Federal Register on February 20. Also known as the Green Paper (because it is not considered ripe enough to be a White Paper), it laid out a plan for recreating the IANA as a privately regulated non-profit corporation.

Much to the dismay of the Mouvement, and to the delight of its opponents, the NPRM asserted full authority over the IANA, and did not mention the IANA's relations with ISOC or the MoU. In fact, the IAHC/MoU/POC/CORE/PAB process was not mentioned at all. The NPRM plan for the DNS called for five new registries, each initially limited to serving a single TLD under exclusive management. NSI would be allowed to maintain its control of the three TLDs *.com*, *.net* and *.org*, but, as with the CORE plan, registrar functions would be separated. Some suspected that NSI had anticipated this outcome, since it had *already* reorganized itself to comply with the NPRM guidelines, creating a new subsidiary called WorldNIC. Two other alternate registries *.per*, run by Iperdome's Jay Fenello, and Ambler's IODesign indicated their willingness to split off their registrar functions in compliance with the NPRM. One prestigious

CORE registrar, Mindspring, defected, and others began hedging their bets, submitting their *.web* registrations to IODesign.

The release of the Green Paper coincided with one of the most widely reported events of the entire controversy. On January 28 Postel initiated what he later called a test of the root system, directing all secondary root server operators (excepting NSI and U.S. government entities) to use his server B for their primary service. He continued to pull (download) NSI's zone file from Server A, so no interruption of normal service occurred, but if he had wanted to add the CORE TLDs into his own NAMED.BOOT file, which defines the TLDs to be made visible on the Internet, it would have been easy to do. The rapidity with which these operators followed Postel's directive was considered further evidence of his ability to command their trust and loyalty. But this faith in him was not universal. Critics charges he had "hijacked" the root. Magaziner learned what had happened soon after arriving in London for a meeting regarding DNS dispute resolution hosted by Prince, PLC. He called Postel immediately and told him to reverse the situation. Postel did so, announcing the "test" was over. Magaziner later commented during the conference, without using Postel's name, that manipulating the root to add TLDs without the U.S. government's permission would be a criminal offense. [\(34\)](#)

It is noteworthy that Postel did not use the word "test" in his initial email, titled "root zone secondary service" but instead referred to a "small step" in the transition of "management arrangements."

Hello.

As the Internet develops there are transitions in the management arrangements. The time has come to take a small step in one of those transitions. At some point on down the road it will be appropriate for the root domain to be edited and published directly by the IANA.

As a small step in this direction we would like to have the secondaries for the root domain pull the root zone (by zone transfer) directly from IANA's own name server.

This is "DNSROOT.IANA.ORG" with address 198.32.1.98.

The data in this root zone will be an exact copy of the root zone currently available on the A.ROOT-SERVERS.NET machine. There is no change being made at this time in the policies or procedures for making changes to the root zone.

This applies to the root zone only. If you provide secondary [sic] service for any other zones, including TLD zones, you should continue to obtain those zones in the way and from the sources you have been.

- --jon.

Since the word "test" was never used in the first note, one can only speculate whether Postel might have been thinking about making an omelette without breaking eggs. Transitions of this sort had been major events in the early years of the Internet, before terms like "Web" and "email" became household words. In 1984, adding a hierarchical structure to the DNS under

invented names like *.com* and *.net* had been a disruptive event, but only among a small group of people, and well within the capabilities of the computer experts who were running the system. Those previous changes provided a great example of what economists call collective action and coordination problems. The adoption of TCP/IP was another example, and the upcoming transition to IPv6 will provide another. Breaking NSI's monopoly on *.com* without breaking *.com* itself presented a tremendous challenge. The IAHC and CORE had risen to the task, devising a way, at least on paper, that would have fundamentally overhauled the machinery of the root zone without requiring any need for action or awareness by the vast majority of the Internet's users. The DNS concept first conceived by Paul Mockapetris in 1984 was technically sound enough to enable such a transition in 1989, and could again, but the potential for monetary profit had grown too high for the resources to be redistributed without a fight.

Summary

What I hoped to make clear in this section was that both sides to the controversy favored market competition, but that they had very different notions of how to evolve this out of NSI's U.S.-sanctioned monopoly. The IANA and the "inner circles" of the Internet technical community held to a notion of stewardship that they believe granted them clear authority to overrule the market-based preferences of entrepreneurs and private corporations. They hoped to exercise this power through a single, non-profit global organization. In trying to broaden the inner circle which had been controlling DNS policy as a benevolent Internet aristocracy, they reached out directly to those organizations most available to lend their project a formal global imprimatur. On the other hand, NSI and a host of new business entrants were able to convince U.S. policy makers that their shared belief in free enterprise and competition mandated a solution which would expose virtually all Internet management functions to the play of the market.

Both camps agreed on the concept of fostering open markets, and competitive behavior, but they disagreed on the mechanisms which could best construct this. The Internet's stewards believed the most effective approach was by reinforcing the stabilizing, deterministic *hierarchical* authority of the IANA over the root. This would provide a reliable way of enabling market behaviors across the rest of the system, while providing greater security against potential deleterious effects: monopoly rent-seeking, market failure of a TLD, and an escalating proliferation of TLDs which might overburden the technical managers of the primary root. They also sought to create an environment for dispute resolution that promised to overcome what they considered to be the limitations and disadvantages of litigation under U.S. jurisdiction. There are material incentives for the veteran Internet community to favor this approach. The cyber-libertarians who have a high profile in that community are engaged in a campaign to diffuse technologies that they believe can be used to construct a liberal order capable of securing property rights without relying on the coercive power of the state. They feel that some central but limited mechanisms like the DNS can be used to propagate those technologies. Moreover, participants in the IETF standards making process come to the organization as volunteers, but they are generally employed by companies which have much to gain from the expansion of the Internet. Switching equipment sold by CISCO, high end computers sold by Sun and DEC, and connectivity services like those leased by MCI, UUNET, and BBN are all increasingly in demand as more people use the Internet to do more things. Not surprisingly, past and present MCI employees are well represented in ISOC and the IETF. CISCO employees are exceptionally prominent in the IETF, and there are rumors (which I have not yet investigated) that CISCO has begun providing funding for ISI--the USC

program which houses the IANA. In other words, the more that can be done to expedite Internet expansion, the more these companies stand to gain.

Several other confluences of interest helped forge the Mouvement alliance. Trademark interests represented in the IAHC wanted assurances that their investment in brand identities would not be degraded by the ascendance of a new global agency empowered to regulate the assignment of character strings on the Internet. Moreover, the ITU anticipated there would be less call in the future for its services as a venue for intergovernmental negotiations, and was therefore seeking to redefine itself as an entity prepared to serve the interests of transnational business (Fuchs and Koch, 1996; Hamelink 1994).

The Mouvement's opponents generally desired to maintain the Internet's stability, but they were more highly motivated by the *heteronomous* principle of marketization. Thus, the anti-CORE alliance brought together a diverse group of participants. Startup entrepreneurs--the so-called "pirate" alternate registries--had undertaken high-risk investments in pursuit of high-reward payoffs. NSI was jealously defending its existing market advantage. Most importantly, the U.S. government was still deeply influenced by the Reagan-Thatcher legacy of deregulation and privatization. Open market rhetoric was constantly employed in the pronouncements of the "stop the gTLD-MoU" camp. Such themes resonated with U.S. government officials, and were attractive to CATO Foundation allies like Milton Mueller, and academic who became a prominent partisan in the controversy. The private lobbyists employed by this group were also much more highly skilled in their public behavior, and were far more familiar with the ways of Washington.

Internet or Americanet?

This section will close by briefly discussing the arguments made by the individual who should rightly be considered the most effective CORE opponent--Tony Rutkowski, a former assistant to the the Secretary General of the ITU, and former Chief Executive of ISOC. After leaving the ITU, Rutkowski became highly critical of it, pointing out it had long been in adversarial relationship with the Internet (Malamud 1993) and claiming that conspiratorial plans were being hatched behind closed doors there. Returning to the U.S., he was later appointed first chief executive at ISOC, working closely with Vint Cerf on setting up the organization. Rutkowski now criticizes the ISOC board as a group of individuals who share an unspoken, quasi-religious faith in bits and bytes which he considers to be out of step with the general public. (His own philosophical point of view is highly influenced by fashionable theories of chaos and complex systems. Rutkowski owns the domain name *chaos.com* and has used fractal patterns to explain how the Internet works⁽³⁵⁾). After leaving ISOC, Rutkowski tried unsuccessfully to move the IETF from under ISOC's umbrella to a new organization.

Rutkowski has argued that ISOC and the IETF supporters of CORE are naive, and are being manipulated by Shaw and other "loose cannons" in the ITU who have acted outside the law by issuing the gTLD-MoU as an ITU instrument without the consent of member states. Rutkowski's public demeanor and the quality of his writing is generally superb. He is by far the most skilled communicator who has participated in the "DNS wars" (and he was also one of the most fully responsive sources that I interviewed). He testified before the Pickering Committee, and has met frequently with Ira Magaziner, both in Washington and overseas. Rutkowski's website at *wia.org* is an essential resource to anyone who wants to explore this

controversy. Therefore, it is remarkable that he has taken the surprising position that the Internet is essentially a U.S. domain.

Rutkowski has consistently argued in the online discussion groups that the Internet was and would remain primarily an American phenomenon. This prompted occasional discussions regarding host counts, national origin of domain name registrants, relative saturation of third level domains by country and rates of growth of Internet usage in and outside the US. He stuck to this argument tenaciously, even when other CORE opponents disagreed with him on these points. Most observers believe that Internet growth outside the U.S. has already outpaced growth within this country; and that between thirty and forty percent of new registrations in *.com*, *.net*, and *.org* come from outside of the United States. The U.S. market for new user accounts will eventually become saturated, slowing the growth of that base here while it is still accelerating elsewhere. This expectation had much to do with CORE's efforts to promote new TLDs supported by registries outside the U.S. Also, much of the credit for the Internet's exploding popularity in the 1990s should go to non-Americans. One of the first search engines, Archie, was developed in Canada. The World Wide Web was designed by a British citizen working at a European-funded laboratory in Switzerland. And the original graphical Web browser, Mosaic, was created by a Swede studying in the US. Internet Relay Chat (IRC) was developed in Finland, as was Linux, a popular operating system for name servers. ICQ, an important chat technology, was created in Israel.

Despite the overwhelming evidence that the Internet is growing as a global phenomenon, Rutkowski stuck to the premise of perpetual American dominance. This was central to his comments regarding trademarks within his response to the NPRM. "The Trademark Dilemma," he wrote, was a minor issue. Why? "Domain names are used primarily for corporate identification and branding in the United States."

Because the vast preponderance of existing and future generic top level domain use is in the U.S. - and is likely to remain so - the construction of arrangements so as to maximize any resulting litigation in the U.S., seems highly desirable. The remarks of some commenting parties - particularly outside the U.S. - on this matter are especially disingenuous. In fact, the so-called generic TLDs have long been regarded as *de facto* U.S. domains, and eschewed in preference to national domains on a large scale throughout the world.⁽³⁶⁾

He continued, "To call for complex and unnecessary global processes outside the U.S. to deal with what has primarily been a problem among U.S. parties, is little more than a calculated attempt to impede the rapid pace of Internet use and assimilation in the U.S." By asserting that the Internet is primarily a US phenomenon, and then seeking ways to accelerate its expansion here, he excuses the implementation of any policy that would impede the growth of Internet use outside the US. Thus, the Administrative Challenge Panel (ACP) venue created by the gTLD-MoU is deemed inimical to U.S. interests. Terms are defined and policy is structured to induce a presupposed outcome. His agenda seems clearly advantageous and prejudicial to Americans, and would probably be rejected from an equitable multilateral arrangement. Rutkowski's skewed facts may nevertheless appeal to American policy makers who need arguments to justify an Internet policy which is now receiving increasing opposition from

other governments. The NPRM's limitation of new gTLDs to five also have been acceptable to trademark interests who consistently favored restricting growth in the use of domain names. The upshot of U.S. policy will be to divert pent up demand for new domain name registrations back into national TLDs. To a small degree, this will indeed inhibit the growth in the use of domain names outside the U.S., as Rutkowski evidently would prefer. CORE's registration policies were considerably more liberal than that used in most countries outside the U.S., and its prices were expected to be lower.

One of the most ironic outcomes of the delay in adding new generic TLDs to the Internet is that a few national TLDs have been given over to commercial operators. For example, Turkmenistan, hunting for foreign capital, and blessed by history with the familiar English language designation *.tm*, allowed Western-businesses to begin selling registrations in that zone. Various tiny island entities like Nueue and the British Indian Ocean did the same, creating open markets for *.nu*, and *.io*. All these registries committed to using WIPO's ACP structure to facilitate dispute resolution. It remains to be seen how effective an ACP can be if and when a real dispute is placed before it.

Analytical Framework

It is now appropriate to lay out the theoretical parameters which will inform later analysis.

To develop an understanding of the social construction of society is to speak about how we establish and maintain practices that coordinate human activity across space and time (Giddens 1991). If one accepts the constructivist argument that rule-based interactivity defines the ontological center of the process by which agents and structures are simultaneously co-constituted, then an understanding of social practice involves speaking about the rules people use to mediate the allocation of resources (Onuf 1989, Dessler 1989, Roberts 1996). This argument grants no prior, separate, or independent standing to either agency, rules, or structure. Furthermore, the properties assigned to identity, the values assigned to resources, and the preferences granted to competing rules are all seen by constructivists as arising endogenously out of interactivity, rather than given exogenously by the environment. Consequently, if one wants to conduct empirical research within the constructivist framework, it is appropriate to focus on rules, providing actual accounts of how they are produced (Prügl 1998 exemplifies this approach).

What then, might be the rules of global civil society, if any, and how are they generated? Since constructivism is not especially concerned with globalization, I believe an answer compatible with the framework would consider practices which meet an additional set of conditions: 1) Such practices would be conducted more often by more kinds of people dispersed over more places over time; 2) Such practices would be drained, if not devoid, of a territorially-based national or political social character (Reich 1998), and; 3) People who adopt such practices would be reflectively aware of participating in the making of an emerging global social structure. A corollary to this last proposition is that the spread of globalizing practices would be accompanied by an abatement of localized conventions.

Common understandings of globalization are found in the words of Sandra Masur, a prominent representative of the US corporate community, who advocates "across-the-board liberalization of trade in goods, services, and investment." (1991:102, also cited by Rupert:118). But the focus on global marketization--whether Francis Fukuyama's exalted

liberal universalism or Robert Cox's triumphant oligopolistic corporatism--doesn't capture the full intentionality that the term "constructed globalism" is intended to convey. Yes, it is true that "the competition state is essential to the globalization process" (Cerny 1996: 136), and that states around the world are lowering trade barriers and loosening regulatory standards to attract capital (Strange). Another common understanding is echoed by Jan Aart Scholte, who characterizes globalization as an "extension" of modernization that leads to the world "becoming one place" (1996: 43). Again, marketization is central to that process. As Scholte puts it, "A certain degree of globalization was in train well before the term was invented"(47). Recent expositions of globalization increasingly point out the need for students of international relations to "pay less attention to boundaries of states and more to the flows and fractures that run across those boundaries" (Dalby 1996: 39). Studies of this sort would focus on production and consumption flows of specific goods and technologies rather than the gross product of particular territories. There is nothing inherently incorrect in this kind of perspective. The objects we generally find at hand in everyday experience originate from a widening number of nations, but these products are increasingly distilled of local character. If "exotic" character is discernable, it tends to be part of a blend, or an artifact of branding and commercial appeal. The study of these objects might indicate where they were manufactured, and can motivate lessons on geography and the use of maps as we track the movement of goods and services, but it does little to help us understand how other people live and exercise their free will.

More sophisticated conceptions of globalization look at the "reconfiguration of space time dimensions of social organization" (Rosenau ??). In this vein, Manuel Castells, a critical observer of the Information Age has undertaken a multi-volume study of modern business practices. He sees the global economy as increasingly interdependent, asymmetrical, and selectively diversified. The consequence is "an extraordinarily variable geometry that tends to dissolve historical, economic geography" (1996: 106). More importantly, Castells focuses on the forms of techno-economic change that serve as a precondition for global marketization. What prompts the creation of the mechanisms which enable this time-space compression? If globalization is the intensification of consciousness of the world (Robertson 117), how is that consciousness expressed?

The purpose of my third proposition is to emphasize the importance of evaluating how people decide to participate in a global society, rather than simply buy and sell across borders in an international economy. This proposition stresses the reflexively monitored, self-regarded intentionality of globalism. The point of making a distinction between the construction of globalism and conventional understandings of the globalization is to discuss affiliation rather than commodification. One might be tempted to argue that the principle of global trade liberalization satisfies this third proposition: The principle is well known, is widely accepted as common sense (Rupert), and is institutionalized through an array of intergovernmental agreements. The resulting form of rule, however, is primarily *heteronomous*, constituting a dynamic web of arrangements in which all agents presume themselves to be free and autonomous, but which in fact confines agents by their reciprocal commitments to each other. Under such circumstances, the likelihood of maintaining commitments within a particular interaction is highly contingent on the play of unintended consequences and interruption by other commitments. That is how markets work. They create a world of many places.

The stricter test I am applying looks for the global constitution of token values that are stable and organized hierarchically. Such values would correlate to clearly exposed standards of measure and compliance. Openly stated rules of this sort provide a community's citizens and

officers with persistent, logical and empirically verifiable ways of coordinating interactivity without needing to stipulate situational contracts. The payoff is to reduce the potential intrusion of unintended consequences and intervening variables into social interaction. Its demand for standard compliance limits peoples' choices with regard to those interactions, but enables it in many other ways. Enablement is fundamental in all concepts of globalization. That is why the modern push for the mobility of capital, labor, and commodities is so often equated with globalization: The reduction of trade barriers between states enables interactivity across borders. Moreover, to the extent free trade is endorsed as a common sense principle world wide, and people tell each other that it should be maintained as a global norm, one can claim that trade liberalization complies with a constructivist test for hegemony. But trade liberalization shows little evidence of hierarchical rule. Violations of trade rules are policed by relatively weak intergovernmental organizations and arrangements, if at all. So reproduction and actualization of any semblance of free trade hegemony depends primarily on heteronomous interactions.

My tests for globalized practices can be reduced to the terms *ubiquity*, *non-territoriality*, and *intentionality*. To put it more simply, global practices are those which were designed to work globally and are used that way. This will reveal the kinds of behaviors which perpetuate highly standardized values and centrally organized loyalties that can outlast situational associations. The two classic archetypes of this socially constructed behavior are time keeping and monetary accounting. I intend to argue that the use of mail is socially constructed in similar ways, and that most Internet-based communication is a sophisticated form of mail. This will add to our understanding of what is at stake in the emergence of the DNS as a global addressing system.

Global Tokens

It is not uncommon to speak of globalization with regard to mechanisms that facilitate modern forms of work and commerce. Clocks serve as the stellar example of technical artifacts which humans use to coordinate their behaviors by referring to a globally operative authority. The mercurial flow of money between most of the world's currencies demonstrates that national borders barely vitiate the fungibility of financial instruments. And the Internet enables the instantaneous exchange of digitized information among a rapidly growing population of users. All these mechanisms easily satisfy the first condition of constructed globalization by demonstrating movement toward ubiquity, but only time keeping strongly satisfies all three.

For example, deeply embedded practices such as obedience to Babylonian horology, and the Greenwich meridian are now culturally neutral, and no longer seem tied to any particular imperious political force. One rarely finds any local alternative to the synchronization of hours and minutes which can be displaced, let alone offer resistance (Saudi Arabia is perhaps the strongest site of whatever resistance remains). The use of the Gregorian calendar is not as ubiquitous, but it has finally become standard in Europe and the Americas, and its prominence elsewhere continues to grow. Time keeping clearly meets the third condition, given the diplomatic effort which went into establishing a universally shared system of longitudinal numbering (when the Greenwich meridian was resisted by the Americans and the French), and the sophisticated technocratic effort that goes into supporting accurate time keeping today.

On the other hand, despite the ubiquitous presence and the high fungibility of money, almost

all of it is denominated by currencies that are issued by sovereign states. Important and powerful institutional arrangements like the International Monetary Fund exist and are able to exert considerable pressure within specific states, but the IMF's power is constrained by the willingness of client states to abide by its restrictions, as well as by the willingness of governing states to contribute capital and expertise. Other global financial organizations, like the privately-funded International Credit Insurance Corporation favored by George Soros are simply proposals that might receive more attention if a worldwide financial crisis gave rise to a rethinking of the current structure. One can speak of institutions which police criminal activities related to global money laundering, but these institutions arise from the self-help activities of individual nations (such as pressure exerted by the United States) or from reciprocal multilateral arrangements. The best evidence for the rise of homogeneity and reflexivity in the use of money may be found in the expanding availability of credit card and debit card instruments which hide underlying currency transactions from the person who presents the card, but these are employed by a very limited strata of the world's population. So money flows globally, and integrated financial markets do often prevail over national monetary and credit policies, but there is no convincing demonstration that money is coordinated by a central global agency.

Like the metrics of time, weights and measures were highly refined on a global scale near the end of the nineteenth century. Decimal metric standards are now coordinated through the Bureau International des Poids et Mesures (BIPM) in Paris. Like time keeping, many nations switched to their current system of measure at the moment of traumatic dynastic change. The Soviet Union provides an example of this, though the United Kingdom is a notable counterexample. The world's largest national economy, the United States, does not use the metric system as its primary standard of weights and measure, but the metric system is officially recognized, and extremely precise mechanisms are used to keep the legacy English system and the metric system commensurable.

If one wished to evaluate other technically constructed global standards in detail, many artifacts would be available, including workplace norms, market regulation, professional credentialing, identity documents like passports, environmental standards, airport traffic control and air safety, regulation of title such as patent and trademark disputes, and so on. This type of scholarship is most frequently associated with individuals in the orbit of the Society for the History of Technology (SHOT), which has its own school of constructivism. Nevertheless, these researchers have not generally been concerned with policymaking at the global scale.

Comparison of Globally Constructed Standardized Tokens

	Time	Money	Weights and Measures	Mail
Ubiquity	Nearly total (highest)	Nearly total.	Dual Commensurate	Nearly total. (Lowest)
Homogeneity and Non-territoriality	Total. Use of hours and minutes is nearly universal. Gregorian calendar still advancing, used	Mixed. Currencies denominated by sovereignty or multilateral	High. Stabilized dual system, U.S. is significant site of resistance to global metric practices, but	Mixed for physical mail. Some border controls apply, and

	commensurately with local and cultural calendrical systems.	groups. But fungibility between currencies is high. Low but rapidly growing with regard to information based instruments.	fungibility of measures is nevertheless certain.	stamps are nationally denominated. Low but rapidly growing for electronic mail as user base expands.
Global Reflectivity and Intentionality	High. Vested in professional astronomers paid by host governments, but who make decisions independently.	Low. Various attempts to create unitary global institutions have been attempted without success.	High. Metric system is globally recognized.	Medium. Physical and phone addressing is aggregated nationally, but exposed globally. Internet expansion and the DNS controversy reflects an effort to aggregate globally.

The table above shows the direction of the next phase of research on this project. Upcoming work will discuss the social construction of addressing systems. This will be integrated with an analysis of debates between the supporters and opponents of CORE over the question of public goods. The MoU had declared as its first the principle that, "the Internet Top Level Domain (TLD) name space is a public resource and is subject to the public trust" (§I.2.1). CORE's opponents denounced this formulation, responding that the Internet's root and TLD space should be treated as a "shared private trust." These competing assertions regarding the disposition of resources will help to clarify the very different strategies that members of the two camps used to promote a common goal of global marketization. I have argued here that CORE supporters advocated what they considered to be a more direct route, through the technical construction of globalism.

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The research for this paper included public and private e-mail exchanges, interviews and discussions with, among others, Tony Rutkowski, Einer Steffarud, Richard Sexton, Jay Fenello, Christopher Ambler, Robert Shaw, Patrick Faltstrom, Christian Huitema, Tim O'Reilly, Dave Meyers, Bill Simpson, Bob Moskowitz, Dave Clark, Don Heath, John Gilmore, Jon Postel, David Maher, Rob Austein, Chuck Gomes, Dave Farber, Alan Hanson, Hugh Daniels, Bill Flanigan, Robert Fink, Susan Harris, Donald E. Eastlake, III, Dave Crocker, Perry Metzger, Karen Rose, Greg Chang, and Erik Fair. I have tried to keep my reports of these discussions and observed incidents faithful to my best recollection, and to draw quotes from written materials when possible. Therefore, all responsibility for any misrepresentations of their views and comments is my own.

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EXHIBIT JZ-14

**DOCUMENT
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EXHIBIT JZ-15

The Washington Post

NETWORK SOLUTIONS DROPPED AS REGISTRAR OF INTERNET DOMAINS

By David S. Hilzenrath

April 24, 1997

The National Science Foundation said yesterday it will not renew Network Solutions Inc.'s deal to register Internet domains when the Herndon company's agreement with the government expires next year.

But Network Solutions responded by saying it does not plan to relinquish its exclusive hold on the registration of ".com" domains and several other established forms of Internet addresses.

The two announcements leave the future of one of the Internet's central resources in confusion and contention. Domain names serve as something of a Zip-code system for the Internet, enabling users to address electronic mail and locate pages on the graphical World Wide Web. Corporations and organizations pay to register their locations.

A coalition of organizations has been pushing for competition in the registration of Internet domains, including those ending in .com for commercial users, the most popular form of Internet address. Critics have argued that competition could promote better service and lower prices.

As of Dec. 31, Network Solutions had collected \$42.6 million in fees from the enterprise, charging \$100 to register new addresses ending in .com, .org, .gov, .net and .edu. It also charges annual renewal fees of \$50 after two years. Seventy percent of the money is revenue to Network Solutions, a subsidiary of California-based federal government contractor Science Applications International Corp., and the rest is set aside for improvement of the Internet.

The NSF inspector general recently estimated that registrations would generate annual fees of about \$200 million by mid-1999.

National Science Foundation spokeswoman Beth Gaston said it "has not been determined yet" whether the registry Network Solutions operates belongs to the company. The agency put Network Solutions in charge of the registry in 1993, and it has grown to include about 1.2 million domains.

Networks Solutions seemed more definite. "It is not our intention to share .com or the others {domains} we register," Network Solutions spokesman Christopher Clough said. "Those would obviously {be} assets that we've developed . . . much as Microsoft wouldn't share DOS," its proprietary software.

Network Solutions favors competition, but only in the registration of new types of domains, Clough said.

A coalition of groups led by the Internet Society is trying to create a system in which competing registrars could process the same types of domains, including those controlled by Network Solutions.

"They've taken the low road and tried to protect their monopoly instead of taking a leadership role in the best interest of the Internet," said Donald Heath, president of the Internet Society.

The National Science Foundation's inspector general recently recommended that the federal government maintain oversight of Internet addresses and continue earmarking a portion of registration fees for development of the Internet. But Joseph Bordogna, the agency's acting deputy director, issued a statement yesterday saying the commercialization of the Internet leaves the NSF less reason to stay involved. Bordogna said the NSF "has no plans to renew or re-compete" the agreement with Network Solutions. A group of federal agencies, including the NSF, the Federal Communications Commission and the White House's Office of Science and Technology Policy, has been discussing what role the government should play.

 0 Comments

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INTERNET

VeriSign buys Network Solutions in \$21 billion deal

The security software supplier says it will be able to offer its customers a more complete set of e-commerce products and services by acquiring the Net name registrar.

/ JANUARY 2, 2002 4:43 PM PST



Security software maker VeriSign today said it agreed to acquire Net name registrar Network Solutions in an all-stock deal worth about \$21 billion.

With the acquisition, VeriSign said it will be able to offer its customers a more complete set of e-commerce products and services by combining its security software with Network Solutions' (NSI) giant database of domain names and basic e-commerce and Web development services.

The news drew a mixed reaction from Wall Street. By the 1 p.m. PST close of regular trading, shares of NSI were up \$46.75, or about 13 percent, to \$407.38, having hit new 52-week high of \$437.13 earlier. VeriSign shares fell \$47.44, or about 19 percent, to \$200.

VeriSign has been the most visible issuer of digital certificates for the Internet but has recently experienced heightened competitive pressures. The company, along with rivals such as Entrust Technologies, GTE's CyberTrust and other firms, develops software to secure online transactions using Public Key Infrastructure (PKI) technology, as companies begin to conduct far more complex transactions over the Internet. PKI systems issue and manage digital certificates, which serve as electronic IDs for online use.

"I think (the deal is) positive from a strategic perspective," said Todd Weller, an analyst at Legg Mason who follows NSI. "At the end of the day, it's all about Internet identity. Digital certificates are equally important to e-commerce."

Weller said the deal should not be viewed as a surprise, as the two companies have had a "long-standing partnership and share similar business models."

NSI was the sole registrar of Internet addresses from 1992 until last spring, when the Commerce Department approved the creation of new registrars to compete with NSI in the booming market. Before then, NSI operated as a monopoly under contract with the U.S. government, giving it exclusive rights to register coveted ".com," ".net" and ".org" addresses.

The testing period for the new competitive system ended in November, opening to consumers more choices and better prices for obtaining an online identity.

Now there are roughly 100 registrars accredited by the body that oversees the Internet's address system, called the Internet Corporation for Assigned Names and Numbers (ICANN). ICANN is meeting this week in Cairo to discuss the possibility of introducing new top-level domain name endings.

As part of its deal to dissolve its relationship with the government, NSI maintained sole control of the Net name registry, which serves as the master database for all Internet addresses. In other words, competing registrars such as Register.com and NameSecure.com must use NSI's registry to deposit the addresses they have sold. With one company in control of the database, an address cannot be registered twice.

Money matters

Under the terms of today's deal, Mountain View, Calif.-based VeriSign said it will issue 2.15 shares of its common stock for each share of NSI stock prior to the company's 2-for-1 split to be completed March 10.

The deal is valued at approximately \$21 billion based on VeriSign's closing price yesterday of \$247.44.

NSI's shares were on a rocket ride even before the VeriSign deal was announced. Since early August, the company's shares have soared more than sevenfold from \$50 a share to close at \$360.63 yesterday.

A flurry of good news has been driving the company's stock. Last month NSI posted stronger than expected fourth-quarter results and increased the number of domain names registered by more than twofold.

In addition, the company this year has had several significant court wins. In January, the U.S. Supreme Court refused to hear a suit alleging that the company illegally collected taxes from customers. Last month, the U.S. Federal Appeals Court upheld a lower court's decision to dismiss a private antitrust [lawsuit](#), and in a separate action, the Department of Justice closed its antitrust investigation of the company.

Rival registrars reacted positively to the acquisition. Tommy Ho, director of client

services at New York's NameEngine.com, said the billion-dollar stock deal bodes well for small registrars like his because "it focuses attention on this niche."

Bernard Sonnenschein, president of WhataDomain.com, also in New York, agreed. "It's good news for the industry," he said. "Obviously this demonstrates to all the great value of domain names given the price a company was willing to pay for Network Solutions."

Though the deal hasn't had an immediate effect on Sonnenschein's privately held business, he said it will only help in talks with several investor groups and plans for an initial public offering, possibly later this year.

NSI's biggest competitor, Register.com, saw its stock jump \$27.25 to \$77.38 today. Register.com put its stock up for public sale last Friday.

However, Bear Stearns analyst Bob Lam questioned the acquisition of NSI, as it focuses more on consumer business than on corporate transactions.

"The big question here is how does this facilitate (VeriSign's) movement forward into (business-to-business) e-commerce?" Lam said.

Lam noted that VeriSign already has solid relationships in the business-to-consumer market for its security products. "It's not a B2B play," Lam said. NSI "is clearly coming out on top in this deal."

VeriSign CEO Stratton Scavos said in a conference call this morning: "Clearly things are accelerating in e-commerce. This gives us the ability to have a lot more customers...We (can) achieve critical mass."

Scavos expects the acquisition to give Verisign a ready-made audience for its security services. "They (NSI) have a pre-eminent position in what they're doing. Now, it gives us an entry point that we can target our enhanced services at. We think the combination will be one of the key infrastructure plays on the Internet," Scavos told Bloomberg News.

Herndon, Va.-based NSI said it will become a subsidiary of VeriSign, with Jim Rutt continuing to serve as NSI CEO and reporting to Scavos.

The deal has been approved by both companies' boards and is subject to approval by their stockholders. The acquisition, which is also subject to customer closing conditions and regulatory approval, is expected to close in the third quarter of this year, the companies said.

URL:
www.verisign.com
CEO: Stratton Scavos

Employees: 315
Annual sales: \$84.8 million
Annual income: \$3.9 million
Market cap: \$22.2 billion
Date of IPO: January 1998
Ticker: VRSN
Exchange: Nasdaq
More:
[VeriSign quotes](#)
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[VeriSign message boards](#)

Bloomberg
(3/7/2000)

News.com's Patricia Jacobus and Dawn Kawamoto contributed to this report.

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EXHIBIT JZ-17

Date: Fri, 15 Sep 1995 12:40:30 -0700
From: Jon Postel <postel@isi.edu>
Message-Id: <199509151940.AA14345@zephyr.isi.edu>
To: rick@uunet.uu.net
Subject: Re: ISOC Statement on Domain Name Fees
Cc: isoc-trustees@linus.isoc.org

Rick:

I think this introduction of charging by the Intenic for domain registrations is sufficient cause to take steps to set up a small number of alternate top level domains managed by other registration centers.

I'd like to see some competition between registration services to encourage good service at low prices.

I do think we need to proceed with some care, to understand what are the requirements and responsibilities of these service centers, what information they have to provide to the community, what oversight they are subject to and by whom, etc.

I'd be happy if you could help me come up with a plan for this.

--jon.

EXHIBIT JZ-18

priorities

postel@ISI.EDU

Wed, 3 Jul 1996 17:29:28 -0700

- **Messages sorted by:** [\[date \]](#) [\[thread \]](#) [\[subject \]](#) [\[author \]](#)
- **Next message:** [Perry E. Metzger: "Re: Proposed press release"](#)
- **Previous message:** [Christian Nielsen: "Re: Proposed press release"](#)
- **Next in thread:** [Tony Rutkowski: "Re: priorities"](#)
- **Maybe reply:** [Tony Rutkowski: "Re: priorities"](#)
- **Reply:** [Simon Higgs: "Re: priorities"](#)
- **Maybe reply:** [Christopher Ambler: "Re: priorities"](#)
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- **Maybe reply:** [John Navas: "Re: priorities"](#)
- **Maybe reply:** [Perry E. Metzger: "Re: priorities"](#)
- **Maybe reply:** [Richard J. Sexton: "Re: priorities"](#)
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- **Maybe reply:** [Wolfgang Henke: "Re: priorities"](#)
- **Maybe reply:** [Martin Hamilton: "Re: priorities"](#)
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- **Maybe reply:** [Perry E. Metzger: "Re: priorities"](#)
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- **Maybe reply:** [Chris Rose: "Re: priorities"](#)
- **Maybe reply:** [Alex Wilansky: "Re: priorities"](#)
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- **Maybe reply:** [Tony Rutkowski: "Re: priorities"](#)
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- **Maybe reply:** [Matthew James Marnell: "Re: priorities"](#)

Hello.

What are the priorities here ? My list is:

1. Introduce competition in the domain name registry business.
2. Everything else.

So lets focus on how to accomplish the top priority.

General observation: Changing things is hard, introducing separate new things is easier.

The proposal in my draft is to introduce new registries with new iTLDs, and leave every thing that currently exists alone. (We may want to make changes to existing things later (or not), but we don't even have to talk about those possible changes now.)

So issues for discussion later (like in 6 months from now) might include:

- a. sharing a TLD among several registries

This is a very interesting idea and i'd like to see it made workable, but i don't think it is essential to get some simple competition off the ground. We can add it later. I agree that we have the technology to do this. I don't understand the business model.

- b. transitioning out of the COM domain and eventually closing it.

This may be difficult in practice, and after some competition is in place, may be less interesting.

- c. solving the internal contradictions in the world's trademark registration procedures

This is fundamentally impossible.

--jon.

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EXHIBIT JZ-19

draft-postel-iana-itld-admin-01.txt

J. Postel
ISI
June 1996

New Registries and the Delegation of International Top Level Domains

[draft-postel-iana-itld-admin-01.txt](#)

Status of this Memo

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Abstract

This document describes a proposed policy, procedure, and control structure for the allocation of additional top-level domains. Further it discusses the issues surrounding additional international top level domains (iTLDs) and registries, qualification proposals for operating such a registry, and justifications for the positions expressed in this paper.

This document describes policies and procedures to

- o allow open competition in domain name registration in the iTLDs,
- o and provide the IANA with a legal and financial umbrella

Note that while cooperation between competing iTLD registries is allowed, it is not required. This is specifically not assumed in this proposal, and is considered to be an operational aspect of a registry best determined, and coordinated, by contractual agreements between private interests.

The NEWDOM, IETF, and related mailing lists are encouraged to read, and comment, on this material. Presuming a consensus can be found within these audiences, the distribution of this memorandum should be expanded to include general commentary from the Internet community.

1. Introduction

For the purpose of delegation, the top level domains (TLDs) fall into the categories listed below. While all are described to provide context, only the last is the subject of this document.

1.1. National TLDs

The two-character namespace is, and will remain, reserved for ISO country codes under existing accepted Internet RFCs.

National TLDs such as AF, FR, US, ... ZW are named in accordance with ISO 3166, and have, in the major part, been delegated to national naming registries. Any further delegation of these TLDs is undertaken by the Internet Assigned Number Authority (IANA), in accordance with the policies described in [RFC 1591](#).

It is good practice for these delegated TLD registries to publicly document the applicable management policies and further delegation procedures for these national domains, as, for example, [RFC 1480](#) does for the US domain.

1.2. US Governmental TLDs

1.2.1. Delegation of the GOV TLD is described by [RFC 1816](#), and is under the authority of the US Federal Networking Council (FNC).

1.2.2. Delegation of the MIL domain is under the authority of the DDN NIC. See [RFC 1956](#).

1.3. Infrastructure TLDs

TLDs such as IN-ADDR.ARPA and INT are under the authority of the IANA and may be delegated to others, e.g., IN-ADDR.ARPA is currently delegated to the Internic for day-to-day management. They are created for technical needs internal to the operation of the internet at the discretion of the IANA in consultation with the IETF. See [RFC 1591](#) for general guidance on the use of the INT and ARPA domains.

1.4 The EDU TLD

Delegation of the EDU domain is under the authority of the FNC and is currently delegated to the NSF which has contracted to the Internic for registration. See [RFC 1591](#) for general guidance on the use of the EDU domain.

Over time, the FNC and NSF may decide to use other delegation models, such as those described below for non-governmental TLDs.

1.5 The International Top Level Domains (iTLDs) COM, ORG, and NET

COM, ORG, and NET are the current generic international top level domains (iTLDs) which are open to general registration. They are currently delegated to the Internic by the authority of the IANA. See [RFC 1591](#) for general guidance on the use of the COM, NET, and ORG domains.

The INT top level domain is also used for a very restricted class of international organizations established by treaties between the governments of countries. See [RFC 1591](#) for general guidance on the use of the INT domains.

1.5.1. The intent for these iTLDs is discussed in [RFC 1591](#).

Generally, COM is for commercial organizations (e.g., companies and corporations), NET is for the internal infrastructure of service providers, and ORG is for miscellaneous organizations (e.g., non-profit corporations, and clubs).

1.5.2. There is a perceived need to open the market in commercial iTLDs to allow competition, differentiation, and change, and yet maintain some control to manage the Domain Name System operation.

The current situation with regards to these domain spaces, and the inherent perceived value of being registered under a single top level domain (.COM) is undesirable and should be changed.

Open, free-market competition has proven itself in other areas of the provisioning of related services (ISPs, NSPs, telephone companies) and appears applicable to this situation.

It is considered undesirable to have enormous numbers (100,000+) of top-level domains for administrative reasons and the unreasonable burden such would place on organizations such as the IANA.

It is not, however, undesirable to have diversity in the top-

level domain space, and in fact, positive market forces dictate that this diversity, obtained through free competition, is the best means available to insure quality service to end-users and customers.

1.5.3. As the net becomes larger and more commercial, the IANA needs a formal body to accept responsibility for the legal issues which arise surrounding DNS policy and its implementation.

1.6. This memo deals with introducing new registries for iTLDs and additional iTLDs names, it does not deal with the longer term issue of the management and charter of the current iTLDs (COM, NET, and ORG), or the specialized TLDs (EDU, GOV, MIL, INT, and ARPA).

The current iTLDs may come under the provisions of this document when their current sponsorship relationship ends.

The specialized iTLDs have such restrictive requirements for registration that they do not play a significant role in the competitive business environment.

1.7. Trademarks

Domain names are intended to be an addressing mechanism and are not intended to reflect trademarks, copyrights or any other intellectual property rights.

Except for brief mentions in sections 6.1, 6.4, and 9.3, trademarks are not further discussed in this document.

1.8. Observations

There seem to be three areas of disagreement about the proposal to increase the number of top level domains: (1) trademark issues, (2) competition, and (3) directory service.

1.8.1. Trademark Issues

The statement is made that "increasing the number of top level domains does not solve the trademark problem". This may be because "the trademark problem" has no solution.

The Domain Name System was created to simply name computers attached to the Internet. There was no intention that domain names identify products or services in any way, or that domain names have any relationship to trademarks.

Two points must be kept in mind: (a) domain names are and must be unique, and (b) trademarked names are not necessarily unique (and there are many examples of non-unique trademarks).

There are no international trademarks. There is no official international registry of world wide trademarks. Trademarks may be registered per country (and in the United States (at least) per State). The World Intellectual Property Organization offers an international arbitration service on such matters.

There are "strong" trademarks that are registered in many countries and are vigorously defended. These may come close to being unique. There are many "not so strong" trademarks that may be regional or business sector specific (for example, United Air Lines and United Van Lines, or the Acme Brick Company and the Acme Electric Corporation)).

There are two conflicting goals of different trademark holders with respect to domain names: (a) to protect their trademarks against infringement, and (2) to have access to the domain name system to use their trademarks in a domain name.

Trademark infringement is the use of a trademarked name in a way that may confuse the consumer about the source or quality of a product or service. For strong trademarks there may also be infringement if the use of a trademarked name dilutes the value of the trademark.

Holders of strong trademarks want to control every use of their trademark. These people would say it is pointless to create additional top level domains since they will acquire, reserve, and otherwise protect their trademarked name in every top-level domain so no new users will get access to domain names this way, and besides you are just making more work for the lawyers. While these holders of strong trademarks might not actually acquire their names in all the possible top-level domains (no extra income to the registries), they probably would take steps to stop any infringement thus making those name unavailable to anyone else (extra income to the lawyers).

Holders of not so strong trademarks want the ability to use their trademarked name in a domain name while some other holder of the same mark for a different purpose also can use their trademarked name in a domain name. These people would say it is essential to create additional top-level domains to permit fair access to domain names by holders of not so strong trademarks.

I would suggest that the number of not so strong trademarks far exceeds the number of strong trademarks and that the domain name system should provide for the needs of the many rather than protecting the privileges of the few. Thus new top-level domains should be created.

1.8.2. Competition

Another concern with the current situation in the Domain Name System is that there is one registry for the top-level domain names and it is charging fees apparently unconstrained by effective regulation or competition; it is in a monopoly position. Given this, it is reasonable to introduce competition in the form of other registries to provide equivalent services.

There is a question, though, about how equal the service must be to provide effective competition. Does the establishment of new registries provide effective competition with the existing registry and the most popular top-level domain (that is, the COM domain)?

Will people be willing to change their domain name to get better service or lower price? A name acquires substantial value as it is used and it becomes a significant undertaking to change a name. It is unlikely that many companies registered in one domain (for example COM) will change to another (new) domain.

Can other top-level domains be successful? It seems that it is most likely that for new top-level domains to be successful they will have to attract users new to the Internet. This may require marketing efforts and promotion (that is, exactly the competition that is currently missing). This can have a significant impact very quickly. Given that the number of users of the Internet is doubling every year, in three years the current population of Internet users - and domain names - will be a small minority of only one-eighth of the population.

Is there a practical way to share a single domain name between competing registries? There are technical solutions to this problem. But are there are manageable administrative arrangements for this situation. I am not convinced there are.

Even if a manageable administrative arrangement for competing registries to operate in the same top-level domain can be found, these arrangements can be introduced in multiple top-level domains in the future.

While new single registry top-level domains may allow only a limited form of competition, it is a better situation than we have now, and it can be generalized in the future. Thus there is no "competition" argument to prevent creating new top-level domains.

1.8.3. Directory Service

Is the Domain Name System a directory service?

Is it reasonable to expect that if one thinks of a company name that the string "www.company-name.com" will be the locator for that company's web page? Even though it works some of the time now, it is less likely to work in the future even if all company names are registered in the COM domain due to more frequent clashes in names and the requirement of uniqueness.

The creation of additional top-level domain names allows companies to have more natural names in one of the various top-level domains. This will make it harder to guess the actually domain name for a company, but probably no harder that it will become if all companies must find unique names in the COM domain.

This directory problem is not really a Domain Name System problem. The Domain Name System provides a name to address look up service. It assumes that one starts with the exactly correct name and allows the look up of information associated with that name. The Domain Name System does not (and never was) intended to provide a general search facility. It is much more appropriate to use application level search tools like the various web search systems, or directory services like the X.500 directory service to find the exact Domain Name System based on a fuzzier description of the company identity.

The nub of this issue is the question "Should domain names be guessable?" My answer is that it is not possible in general to have guessable domain names, so we shouldn't try too hard. Thus there is no "directory service" argument to prevent creating new top-level domains.

1.8.4. Side Remarks

1.8.4.1. Case Law on Trademarks and Domain Names

Trademark holders must assume that domain names are related to trademarks. One of the requirements to keep a trademark is that it be defended. If a trademark holder becomes aware

of something that might be an infringement of the trademark, it would be folly not to pursue the issue, lest it turn out to be important, and they lose their trademark because of lack of action. That they take this action doesn't mean that it is required, just that there is some doubt. Until one of these cases actually makes it to a high-level court, no one is going to know for sure.

The courts will either decide that domain names don't infringe trademarks, simply because of their existence (unless possibly someone has a trademark on a full name like "isi.edu" or "cisco.com") at which stage the trademark holders will know that they don't have to go chasing every domain that happens to use their magic word somewhere in it, or they may decide that the use of "foo.com" is actually a violation of someone's trademark on "foo", in which case people may make trademark searches before registering domain names.

Even if the use of a trademarked word in a domain name is ruled to not inherently infringe the trademark it is still possible to use the domain name in a way that would be an infringement of the trademark.

It is also possible that creating new top-level domains will strengthen the interpretation that the Domain Names System simply names computers and is not related to trademarks by making it clear that in a domain name like "foo.com" or "foo.bus" the "foo" part cannot be extracted and be left with any meaning at all, it means something only with the complete suffix appended as an indivisible string.

Treating the Domain Name System as a directory service may also strengthen the arguments that domain names identify products and services and thus are subject to trademark considerations.

In two real cases in the United States courts have found that use of the equivalent of the "foo" in "foo.com" is a violation of trademark. For practical purposes the law is now established - the use of someone else's trademark in a domain name in and of itself can be an infringement of trademark.

1.8.4.2. Proposal to Eliminate International Top-Level Domains

There is a viewpoint that the problems generated by the United States legal system should be confined there (and the

same for every country in the world). This argues to eliminate the the international top-level domains (COM, NET, and ORG) altogether and proposes to sweep the current users of those domains into the country code domains. One logical consequence of this view is that corporations in the Unites States should be registered in COM.US.

This argument suggests that the trademarked words versus domain names issue is a United States only phenomenon. While this might be possible, i think it is short sighted. When the number of companies registering domain names in other countries reaches a large number or a substantial percentage of the number of companies in that country, i think they will find they have substantially the same problems as currently occur with the COM domain.

This proposal would not fix the trademark, competition, or directory issues, but it would repatriate them. There is presumably no existing law, but it might be relatively easy to establish that acme-cleaners.co.uk and acme-cleaners.com.us were distinct and non-confusing to consumers. So there may be actually some improvement with respect to not so strong trademarks.

While this is an interesting suggestion, it is completely unrealistic. The concept of moving - renaming - all the over 200,000 companies now registered in the COM domain is simply a non-starter.

So, the argument goes, just close the COM (and NET and ORG) domain to new registrations and tell all those making registration requests "were sorry, COM was a mistake, you now have to register under your country code". After all, by the growth argument, in a couple of years the number of companies in COM will be a small percentage of the total population.

I don't think this will work. There would certainly be a lot of complaints (and probably legal actions) suggesting that some unfair practices were being followed and that the new requesters were being arbitrarily disadvantaged. I think it would be hard to argue that over 200,000 registrations following a procedure in place over 5 years was a small mistake.

By the way, i've explored the possibility that there might be technical reasons to limit the size of a domain. For example, not enough disk space, or too big to transfer for

backup, or whatever. The technical experts say not to worry, there are solutions for all those possible problems.

A key point in this little story is the statement "This would not fix the trademark, competition, or directory issues, but it would repatriate them.", which is an admission that no problem is solved by this proposal, rather the problem is moved to some other sphere of responsibility. As a practical matter, the suggestion is to close COM and open COM.US. The result would be a lot of pain for registration authorities and staff as well as the companies denied registration in the COM domain, and not much else. All the existing conflicts would emerge at once. Much pain, no gain.

A side point to this proposal is that it reinforces nationalistic tendencies rather than supports the shared world spanning community feeling.

2. Goals

To facilitate administration of the domain name subsystem within the Internet by ensuring that there is an open and competitive marketplace for clients to obtain and subsequently maintain delegation of subdomains within the iTLDs, while preserving the operational integrity of the Internet DNS itself.

The specific measures to achieve this objective are as follows:

- 2.1. Provide the IANA with the international legal and financial umbrella of the Internet Society (ISOC),
- 2.2. Allow open competition in domain name registration in the iTLDs, which will then allow registries to charge for their services,
- 2.3. Allow multiple registries to operate cooperatively and fairly in the existing iTLDs and/or other multi-registry iTLDs which may be created,
- 2.4. Facilitate creation of new iTLDs in a fair and useful, but reliable, fashion,
- 2.5. Provide for reliable maintenance of the registrants of an iTLD should the current delegatee no longer wish to maintain it, and

- 2.6. Define iTLD policies and procedures by open methods, modeled on the IETF process and/or using IETF mechanisms when appropriate.

3.0 Scope of this Document

This document describes the administrative structure for the operation of the iTLDs. While other administrative issues may exist within the broader domain of the DNS, they are not addressed in this document.

Specifically:

- 3.1. Only those relationships between the IANA, IETF, and ISOC which are specifically necessary for responsible maintenance of the iTLDs are described.
- 3.2. The Board of Trustees acts for the ISOC, the IAB for the IETF, and the IANA for itself.
- 3.3. Long range maintenance of the IANA is not described; although it is believed that the IANA should draw financial support from a wide community.
- 3.4. The IETF is not directly involved in operation of the net. Hence it serves the iTLD administrative work mainly in a technical capacity, such as the formalization of new protocols and the handling of technical appeals.
- 3.5. The ISOC does not directly operate the net. But it takes legal responsibility for standards processes and some network management processes, manages funds, and participates in the appeals process.
- 3.6. The IANA and any necessary ad hoc groups deal with operational details.
- 3.7. The ISOC, the IETF, and the IANA are not to be legally or financially responsible for the registries. The registries must be responsible for themselves.
- 3.8. Creation of a large staff is not desired.

4. Technical Assumptions

Further growth within the iTLDs can be accommodated technically, and tools are in evidence to automate much of the process of registration and maintenance of entries within the DNS as well as multiple administrative access to a single delegated domain.

4.1. The size of current TLD databases such as COM, while large, is not really a burden on servers, nor is it expected to become so in the near future.

4.2. Procedures which allow mutual exclusion for the creation of names within a single TLD are being developed within the IETF's "dnsind" and "dnssec" working groups, and a test implementation is available.

4.3. Tools are being developed to ease the processes of registration and running the information servers which are expected of registries.

5. The Process

5.1. The IANA continues to supervise and control all operational aspects of the iTLDs, and is the second level of the appeals process after the registries (which are the first level). It appoints three members to the ad hoc iTLD group. The IANA may directly review appeals and/or it may ask the Internet DNS Names Review Board (IDNB) to participate in the review of an appeal. The IANA has the option of asking the IDNB to review an appeal, or the IANA may handle the appeal itself.

As described in [RFC 1591](#) regarding a dispute between parties contending for the management of a national TLD, the IDNB, a committee established by the IANA, will act as a review panel for cases in which the parties can not reach agreement among themselves.

Now the role of the IDNB is expanded to include appeals on a technical basis of the process documented in this memo.

5.2. The IETF, as part of its normal procedures, publishes documents which describe technical and operational aspects of the domain space including the iTLDs. It also provides an appeals procedure for process issues and appoints two members to the ad hoc iTLD group(s). That is, it reviews appeals that question whether the process was properly followed.

5.3. The ISOC provides the legal and financial umbrella, and the final level of the appeal process. It provides an appeals procedure for procedural issues and appoints two members to the ad hoc iTLD group(s). The ISOC assumes legal liability for the process and the iTLDs. The ISOC reviews appeals that question the fairness of the process itself (not the application of the process to a particular case).

5.4. The ad hoc working group, for developing procedures and deciding creation of new iTLDs and chartering of registries, consist of seven members appointed by the IANA (3), the IETF (2), and the ISOC (2).

5.5. Note that 'ad hoc' means 'for this purpose only.' In this case, a new ad hoc group is created and convened on a periodic basis (probably annual) when needed to change procedures or to review registry and iTLD applications.

5.6. It is estimated that approximately thirty (30) new iTLDs allocated to approximately ten (10) new registries will be created per year. It is expected that this will continue for the next five years - unless something significant happens to change this plan.

In this first year of this plan significantly more new iTLDs and registries may be chartered, perhaps up to one-hundred-fifty (150) iTLDs allocated to up to fifty (50) registries.

5.7. The policies and procedures to be used by the ad hoc working group will be decided by the first ad hoc group in an open process and will be clearly documented. This group will be appointed and convene in in the next few months. It is expected that these policies and procedures will mature over time.

5.8. Multiple registries for the COM TLD database, and multiple registries for other (new and old) iTLDs may be created in the future.

5.9. New iTLDs and registries will be created over time. This is a direct change to [RFC 1591](#). New iTLDs may be created with a non-exclusive administration arrangement (multiple registries for one iTLD).

5.10. The intent is similar to the licensing of radio stations in some countries.

5.11. Registries pay for charters, and the fees collected are kept in a fund managed by the ISOC and used for the iTLD process (such as for insurance against an iTLD registry withdrawal or collapse), and possibly to support an evolved future funding model for the IANA.

6. Selection of iTLDs and Registries

6.1. The New Registries and iTLDs

There will be up to one-hundred-fifty (150) new iTLDs allocated to as many as fifty (50) new registries, with no more than two thirds (2/3) in the same country, created in 1996, and chartered to operate for up to five years.

In the case that all the applications are from one country (for example, United States) then only thirty-three (33) new registries and only ninety-nine (99) new iTLDs would be established

Up to three iTLDs may be operated by any single organization. Each new registry will choose up to 3 new iTLD names it will manage under its charter.

There will be no institution of multiple registries per iTLD in 1996 by the ad hoc committee. Registry operators are encouraged to make such arrangements on their own initiative.

Summary: A new registry gets up to three new iTLDs for exclusive management for a period of up to five years; if the registry chooses it may establish a joint management of one or more of its iTLDs with other registries. All registries will be reviewed after five years, it is very likely that registries that provide good services will be rechartered.

6.1.1. The new iTLD Name Space

It is desirable to maintain a "short" suffix on these iTLDs to permit easier use by the public. As such, the presumption will be that only three-character alphanumeric iTLDs will be assigned.

The space of new iTLD names will be restricted to alpha numeric strings of exactly 3 characters. iTLD names are case independent (i.e., COM = com = cOm).

```
<iTLD-name> ::= <let-dig> <let-dig> <let-dig>

<let-dig> ::= <letter> | <digit>

<letter> ::= A | B | C | ... | Z

<digit> ::= 0 | 1 | 2 | ... | 9
```

These names must be generic, i.e., not well known company identifiers or trademarks. iTLDs which are previously registered trademarks are specifically excluded from consideration as appropriate assignments.

A possible exception might be for a generic term that is trademarked substantially world wide and is not associated with a particular product or service or purpose other than domain name registration.

This condition may be impossible to enforce, since on a world wide basis it may be very difficult to determine if a particular string of letters is a trademark in any country or is the identification of a well known company in any country.

In any case neither the IANA nor the ad hoc committee plan to spend any time or energy on research in this area. The applicants to operate registries and manage iTLDs are on their honor not to select iTLD names knowingly in violation of this condition.

6.2. Who May Apply

Persons or organizations wishing to operate registries and manage iTLDs shall send applications to the IANA in accordance with the provisions of this memo.

A "person or organization" may be a single person or organization or any group of persons and organizations which may combine to offer registration services under one name as a cooperative or competitive provider of services, provided that all partners in the confederation or alliance shall otherwise be in compliance with the terms of this document.

Organizations granted iTLD names may add or remove additional cooperating registration partners at their discretion, provided that doing so does not violate the provisions of this memorandum.

6.3. Open Process

The applications for iTLD domain names and registries shall be evaluated in a neutral, impartial, and open manner.

The proceedings and evaluations of the applications submitted shall be available for public inspection via an on-line procedure (e.g., web site) along with the decisions made.

Financial and business aspects of proposals are kept confidential during the evaluation process. The complete proposal of the successful applicants, including these aspects, will be made public at the completion of the ad hoc committee process.

6.3. Review Criteria

All applications are judged on three criteria: Registration Services, Operational Resources, and Business Aspects.

Business aspects are not necessarily the most important criteria, reliability, quality of service, sustainability, are also important aspects.

When a registry which has provided good quality and reliable service comes up for charter renewal, barring unusual circumstances, the charter renewal application should be approved.

6.3.1. Registration Services

Each registry provide the following administrative services and policies for each iTLD they administer:

1) Access to the Registration Database

The DNS database files and "whois" databases maintained by any iTLD operator are deemed to be publicly available and public, non-protected, information. The intent is to allow easy access to the information needed to investigate and correct operational problems.

A registry shall provide guaranteed availability of the registration data in a useful form should transfer of responsibility become necessary, e.g., regular publication of the information, or regular deposits of copies of the information with a reputable "escrow holder" instructed to release the information to the IANA.

The IANA is authorized to designate an organizations as the

escrow holder of said database information for the purposes described below under "Termination of Registries".

The escrow holder will have to keep very up to date copies of the database probably through some automated system that makes a copy on a daily basis.

There may be reasons (other than "transfer of responsibility" or "termination of registries") to provide controlled access to the data held by the escrow holder for special purposes, such as legal proceedings in trademark cases.

The registry must provide a means, via the "whois" protocol, to search the database of second-level domains maintained by this registry and return common directory information. This information shall include, but not necessarily be limited to:

- a) The "owner" of the second-level domain, including contact name(s), physical address(es), and telephone number(s) of the persons responsible for the operation of the second-level domain.
- b) The nameserver hostnames and IP addresses serving that second-level domain.
- c) The current status (operational, on hold, pending, etc) of that second-level domain.

There is no intent to have a "global phonebook" of second-level domain holders. The intent is to provide information necessary for tracking down and resolving operational problems.

iTLD registries are expected to provide their own directory service, and "rWhois" is designated as one of the operational choices which a registry may wish to utilize. However, no attempt is made to mandate any particular technical or organizational requirements from a registry to service requests for lookups of a domain holder in other, competing registries and iTLDs.

Internal database and operational issues are to be decided by the registry. These issues, including pricing to customers of the registry, are properly free-market issues and are excluded from the control of the IETF, IANA, ISOC and other related organizations.

- 2) A help desk and staff to answer questions via electronic mail, fax and normal telephone during customary business hours.

3) Published policies on services offered, registration procedures, and fees.

4) A clear description of the appeals mechanism within the registry, including the entry point for appeals and the expected response time.

5) All of the public information identified in points 1 through 4 above shall be made available via WWW, FTP, and automated email responder at an address associated with the organization.

6.3.2. Operational Resources

1) Internet Connectivity

A description of the Internet connectivity to the site where each nameserver for each iTLD will be located.

For example, a diagram showing full multi-homed connectivity to the organization's computers which will serve as the iTLD nameservers, with each leg of that connectivity being at a non-aggregated data rate of <*** whatever ***>.

And route advertisement via BGP4 for this organization's connectivity must be operational for the connections maintained under this provision, and the network involved should be operating in a "defaultless" configuration.

2) Nameserver Performance

The description of at least two (2) nameservers for the iTLDs in question. These nameservers shall run the latest "consumable" release of the BIND code (4.9.x at present), and may include local enhancements, changes, or operational improvements.

The names and IP addresses of the hosts which are proposed to serve the iTLDs.

6.3.3. Business Aspects

A description of the applicant which shows sufficient business viability that the registry is likely to operate successfully for at least five years (this is not a business plan, rather some documentation that lends credibility to the applicant's proposal).

An initiation fee of USD 10000 payable to the "Internet

Society" to be deposited in the "iTLD fund"; and each registry established under this plan will contribute one percent (1%) of its gross income from fees, dues, or other charges to its customers to the "Internet Society" to be deposited in the "iTLD fund", to be paid on a quarterly basis.

6.4. The Application

All of the information required to be supplied with an application should be prepared for transmission via email in plain ASCII text, in English. The details of the submission of applications will be determined by the ad hoc committee.

The application shall include the following:

6.4.1. Applicant Name

The name of the applicant, including the contact information.

6.4.2. iTLD Names

The three three-character iTLDs proposed, along with an statement indemnifying the IANA and the ISOC for any infringement of trademark which may be created by the IANA authorizing this assignment.

6.4.3. The Criteria Statements

The applicant's approach to the three criteria of [section 6.3](#), Registration Services, Operational Resources, and Business Aspects.

These statements should include:

A clear statement of the charter, policies, and procedures,

a statement of registrant qualification procedures,

a statement that they will be non-discriminatory in the sense of treating all applicants equally (if a registry chooses to operate the iTLD "CHM" for companies in the chemical business it may decline to register companies not in that business)

a description demonstrating the organizational and technical competence to run a registry and the expected accompanying information services,

a statement that the registry will

- (1) abide by the results of the appeals process (as described in this memo) and the direction of the IANA, and
- (2) hold harmless ISOC, IANA, IETF, the ad hoc committee, and
- (3) obtain the usual prudent insurance.

6.4.4. The Application Fee

A non-refundable application fee of USD 1000 payable to the "Internet Society" to be deposited in the "iTLD fund".

6.5. Charters are for a period of five years, but annual progress reports are submitted for review by IANA and the ad hoc group. Only in exceptional cases of radical change or abuse of a charter may the IANA or the ad hoc group recommend to the IANA and ISOC that the charter be reevaluated before the charter period is reached (see appeals process, and termination of registries sections).

6.9. Sorting Out the iTLD Requests

It is fairly likely that several applicants will request the same iTLDs.

Suppose that two or more of the registry applicants that have been otherwise approved by the ad hoc committee have requested the same name as one of their new iTLDs.

The ad hoc committee will have to use an unbiased and fair method to select which applying registry is to manage that iTLD.

This could result in some approved registries having fewer than three iTLDs to manage.

After all the original iTLD requests of the approved registries have been resolved any registries with fewer than three iTLDs to manage will be asked to propose additional iTLD names until three non-conflicting names have been selected.

6.10. Contract

The actual agreement to establish a new registry will take the form of a contract between the registry organization and the Internet Society (ISOC).

6.11. Schedule

There are several stages that each take some time: forming the ad hoc committee, finalizing the procedure, accepting the applications, and evaluating the applications.

6.9.1. Assume the ad hoc committee is be formed day 1.

6.9.2. The ad hoc committee will finalize and announce its procedures by day 30.

6.9.3. The ad hoc committee will accept applications until day 90.

6.9.4. The ad hoc committee will review the applications and announce its selections by day 135.

For example suppose the ad hoc committee was formed on 1-May-96. Then the schedule would be:

01-Jul-96	ad hoc committee formed
01-Aug-96	procedures finalized, begin accepting applications
01-Oct-96	stop accepting applications, begin evaluation
15-Nov-96	announce selections

7. Termination of Registries

iTLD registries may decide they no longer wish to operate their registry. Likely, the operation will not be profitable when this occurs, yet the registrants under the iTLD may need to be supported for a considerable time.

Some portion of the fees in the ISOC-managed iTLD fund may be used to pay for some other organization to operate the failing iTLD or registry until it again becomes viable or until the registrants have safely migrated elsewhere.

While it is unclear how expensive providing even temporary service for the iTLDs of a failed registry might be, the iTLD process must be prepared for the case where a very popular, possibly because it is low cost, iTLD or registry fails.

Some views on the possible scenarios:

It will be very expensive.

Bailing out the registrants of a failing domain could be very expensive, even on the order of a million USD (remember, a likely failure mode may be because someone thought they could do it for less).

It is not a big deal.

It is presumed that any registry with a significant client base will constitute a legitimate on-going business interest with revenue prospects sufficient to insure that the registry will in fact be transferred to another organization.

As an example, presuming 5,000 registrants of a given registry and a fee of 50 USD per year, a revenue stream of 250000 USD per year would inure to the benefit of any organization taking over the services of a defunct organization.

Should a registry close without having significant second-level registrations in place at that time, the impact to the Internet users as a whole will be minimal or non-existent.

Succession issues related to the relationships between customers of a registry and that registry itself are properly contractual matters between the registry and its customers, and when properly attended to do not involve the IETF, ISOC, or the IANA.

The IANA or its designee may operate an "escrow holder" to insure that the records contained in a registry will remain available in the event of intentional or accidental destruction due to a registry forfeiting a iTLD.

Organizations providing registry services may elect to terminate their involvement in this program and release the iTLD namespace delegated to their organization under the following circumstances:

- 7.1. Any organization may transfer the authority for, and registration services provided, for a iTLD to any other organization provided that the new registration authority complies with all provisions of this memorandum. The business and financial terms under which this transfer is conducted shall be properly between the old and new registry organizations and not under the jurisdiction of the IANA, the IETF or the ISOC. However, the IANA must be notified of such a transfer, and the charter of the registry for the management of these iTLDs shall be reviewed as a renewal of the charter at the next normal session of the ad hoc committee.

7.2. iTLDs which are "orphaned" by a registry that constructively abandons them or ceases business operations without first securing a successor organization to assume the authority and registration services for that namespace shall be deemed "abandoned". Abandoned iTLD namespace shall be auctioned to the highest bidder by an open, competitive bid process adjudicated by the IANA or its designees, which shall be conducted without undue delay. During the interim period in question the IANA shall be authorized to designate one or more firm(s) to hold the existing registration records to prevent the interruption of service.

7.3. An organization that is found by the IANA to be in violation of the terms of this delegation memorandum shall be given notice by the IANA of intent to recover the iTLD domain space allocated under this policy via normal postal mail. Within 30 days, the organization against which the complaint has been lodged shall a) cure the violation(s) of this policy, (b) transfer authority to another organization under 7.1 above, or (c) constructively abandon for public auction the namespace under the provisions of 7.2 above. Where the facts are disputed regarding possible violations of this policy, the IANA is authorized to promulgate reasonable adjudication policies which should include an arbitration provision.

8. Finances

It is desirable to keep the ISOC, IANA and IETF from becoming involved in operational and contractual aspects of the iTLD registries, and it is further desirable to separate, to the extent possible, the IETF and IANA funding from these organizations.

It is presumed in the best interest of the IETF, the IANA, and the ISOC to see that this separation of function is preserved.

Note:

Indemnification provisions from the registries to the IANA and related organizations may not serve to properly insulate the ISOC, IANA and IETF from legal proceedings, as it should be presumed that any organization which is legally challenged in a significant fashion may be unable to properly pay any judgments levied against it. Current "deep pockets" legal practice exposes related organizations to the negative effects of these legal actions should the original organization be unable to fulfill its financial obligations.

There is a concern that the presence of a funding path creates a tying arrangement between for-profit organizations and a set

of non-profit organizations which up to now have not been legally, financially, or otherwise encumbered by the actions of these registries.

- 8.1. A registry may charge as it sees fit, within the bounds of the policy published when it is chartered.
- 8.2. The ISOC manages all finances in a separate iTLD fund with open reporting and published budgets. Agreement of the ISOC, the IANA, and the IETF is required on all budgets.
- 8.3. Charter fee income may be used to pay legal costs of the IANA, IETF, ISOC, and ad hoc groups when legal disputes arise from the iTLDs process.
- 8.4. Charter fee income is also used to pay modest and publicly visible costs of the chartering process, e.g., the costs of the ad hoc committee, the administrative staff, and costs incurred by the ISOC.
- 8.5. Charter fee income may also be used to fund the IANA if and when it becomes necessary.
- 8.6. Should the reserves be too large, a consensus of the IANA, IETF, and ISOC would allow disbursements for the general network good, e.g., scholarships for engineers from developing countries.
- 8.7. The ISOC may charge a modest amount for administering the iTLD account.

9. Appeals

Arbitration to resolve conflicts is encouraged. That an appeals process is specified should not preclude use of arbitration. The appeals process described here is for when arbitration has failed or when the parties decide not to use arbitration, yet they do not wish to exercise recourse to lawyers and courts.

- 9.1. The appeals process does not apply to disputes over Intellectual Property Rights on names (trademark, service mark, copyright). These disputes are best left to arbitration or the courts. Registries may require appropriate waivers from registrants.
- 9.2. The appeals process does not apply to charging and billing. This is left to market forces, arbitration, and the courts.

- 9.3. The appeals process applies to all other aspect of registry processing of registration requests.
- 9.4. A registrant's first recourse is to the registry which has denied them registration or otherwise failed to provide the expected service.
- 9.5. All registries must specify in their applications an entry point and a process for appeals, as well as a response time, and must subsequently conform to them.
- 9.6. If appellant is dissatisfied with the registry response, appeal may be escalated to the IANA. The IANA hears appeals based only on technical issues. Note that the IANA may use the IDNB to process the appeal.
- 9.7. The IANA must define its entry point for appeals and must respond to appeals within four weeks.
- 9.8. If appellant is dissatisfied with the IANA response, and the appeal has nontrivial process aspects, the appeal may be escalated to the IETF. The IETF hears appeals based only on process issues, that is, claims that the procedure was not followed.
- 9.9. If appellant is dissatisfied with the IANA and, if invoked, the IETF response, appeal may be escalated to the ISOC. The ISOC appeals process hears appeals only about the fairness of the procedure. I.e. the decision of IANA and/or IETF is final, unless there is an appeal that the procedure itself is unfair.
- 9.10. The appeals process works by email. Appellant must provide concise history of the case and summarize grounds of appeal. The IANA, the IETF, or the ISOC may ask for information from third parties. All information is normally treated as nonconfidential and may be made publicly available. Confidential information is considered only in special circumstances.
- 9.11. The IANA, the IETF and the ISOC may establish appeals sub-committees chosen either from their own membership or outside of it by whatever means each deems reasonable for their procedures and purposes.

10. Security Considerations

There are no known security considerations beyond those already extant in the DNS.

11. Acknowledgments

This memo is a total rip off of a draft by Randy Bush, combined with substantial inclusion of material from a draft by Karl Denninger. The appeals section was originally written by Brian Carpenter.

To this base i've made many changes small and large. So to the extent you like this it is probably their work, and to the extent you don't like it it is probably all my fault.

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EXHIBIT JZ-20

Getting Started

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What is the difference between a registry, registrar and registrant?

There are three different roles that participate in the domain name registration process: The registry, registrar, and registrant. The following information breaks down each role and how they work with one another:

Registry: A domain name registry is an organization that manages top-level domain names. They create domain name extensions, set the rules for that domain name, and work with registrars to sell domain names to the public. For example, VeriSign manages the registration of .com domain names and their domain name system (DNS). To learn more about DNS, see [What is DNS?](#)

Registrar: The registrar is an accredited organization, like GoDaddy, that sells domain names to the public. Some have the ability to sell top-level domain names (TLDs) like .com, .net, and .org or country-code top-level domain names (ccTLDs) such as .us, .ca, and .eu.

Registrant: A registrant is the person or company who registers a domain name. Registrants can manage their domain name's settings through their registrar. When changes are made to the domain, their registrar will send the information to the registry to be updated and saved in the registry's database. When you register a domain name, you become a registrant!

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EXHIBIT JZ-21

Domain Names



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Outline

Concern over domain name regulation problems prompted the Internet Society, a non profit organization in Washington, to create an international committee - the Internet Ad Hoc Committee (IAHC) to investigate the problem. The IAHC contained members from various international and Internet organizations. The committee's final report outlined the Generic Top Level Domain Memorandum of Understanding (gTLD-MoU), a document aimed at decreasing the problems with the current system of domain name allocation.

The proposal called for the creation of seven new top level domain names (TLD's) to relieve the pressure on the current generic-TLD's (.com, .org, .net). These limited domains are beginning to fill up, causing conflicts among organizations looking for domain names. The seven domains suggested are:

- .firm - for firms or businesses
- .store - for businesses offering items for sale
- .web - for organizations focusing on Web topics
- .arts - for organizations promoting the arts stressing the arts
- .nom - for servers that provide a personal reference
 (Brandon@salmon.nom, for example)
- .info - for organizations focused on providing information
- .rec - for organizations providing recreation

The proposal also created five organizations to regulate the domain name system:

- The depository
- The Policy Advisory Body (PAB)
- The Policy Oversight Committee
- Council of Registrars (CORE)
- Administrative Domain Name Challenge Panels

The Depository

The depository is the organization assigned to spread the gTLD-MoU and to keep a list of signatories, at the current time this is the Secretary General of the International Telecommunications Union. Currently 217 different organizations have agreed to abide by the agreement. These organizations include large Internet providers, businesses, and Internet organizations. However, no governments have agreed to the proposal.

The Policy Advisory Body (PAB)

The PAB would be the body assigned to make recommendations regarding "general policy matters" and changes that might need to be implemented in the gTLD-MoU to the The Policy Oversight Committee.* This body would be made of members from any of the organizations involved that wished to participate, and would make decisions based on "rough consensus" of the members. However, the PAB would not be able to make any binding decisions, only advise the POC (see next section).

The Policy Oversight Committee (POC)

The POC would be the controlling body of the organization entrusted with regulating the Council of Registrars. This body would be responsible for making decisions regarding things such as the number of registrars, the requirements for registrars and the removal of registrars that did not comply with the committees regulations. This committee would contain twelve members from the various organizations that created the gTLD-MoU. Decisions by the POC would be made by a 67% majority, to insure that a small faction could not control the decisions of the committee.

Council Of Registrars (CORE)

This council would include the certified registrars who will assign second level domain names in a "fair-use, first-come, first-served basis." In order to become a registrar, the organizations have to pay \$10,000 to the POC, to support the upkeep of the the root servers, which would contain lists of the actual registered domain names.* These registrars would then be able to offer domain name registration as long as they operated within the regulations set up by the gTLD-MoU in Switzerland. Competition among the registrars is intended to keep prices at reasonable levels.*

The CORE will be an organization stationed in Switzerland, containing representatives from all registrars. The CORE will have representatives on the POC, to allow registrars to represent their opinions. The registrars will be located around the world, thus giving all Internet users access to register domain names.

Administrative Domain Name Challenge Panels (ACPs)

These organizations will be available to resolve disputes regarding domain name registration. These committees will be organized by the World Intellectual Property Organization (WIPO). The decisions of the committees would be binding on registrars, but would not interfere with local court decisions. Thus those involved in a domain name dispute would have the option of settling through outside means, rather than through the panels.

Current State of the Proposal

The committees listed in the proposal have already been created, and registrars have already joined CORE. Thus the proposal is in many ways functional. However, the announcement of the [U.S. Green Paper](#), has changed the situation, making it difficult for the proposal to continue as proposed. However, the POC is attempting to become a registry within the U.S. plan, and perhaps split into separate organizations to qualify for more domain names. Thus the procedures outlined in the proposal will still be applied to at least a part of the domain name system if CORE is able to become one or more registries.

Responses to the Proposal

The gTLD-MoU received a variety of responses, including a large amount of criticism. Many people were concerned that the committee has too monopolistic, since the original registrars and POC would have control over the system. In this way the proposal would give control to a very few, who could easily abuse the remainder of the Internet population.

In addition, many companies are concerned that the addition of new TLDs will only cause more difficulty for them, since there will be far more domain names that could be problematic for their trademarks. For example, right now IBM would probably only need to worry about the domain names `ibm.com`, `ibm.net`, `ibm.org`, and `ibm.edu`. However, if more new domain names were added, IBM will have to worry about registering their trademarked name as well as common variations upon their name in every new top level domain.

EXHIBIT JZ-22



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NSF is tired of the name game

By Peyman Pejman

Oct 20, 1997

The National Science Foundation has told a congressional subcommittee the agency wants to get out of overseeing the Internet domain name registration as soon as possible.

NSF and the Commerce Department want the private sector to take full responsibility for the registration system. Many in Congress agree, but want the administration to provide a plan for the transition period before the private sector can pick up the task.

Larry Irving, assistant Commerce secretary for communications and information, told the House Science Subcommittee on Basic Research the administration does not have a plan yet, but promised to provide a preliminary one by the end of the month.

The General Services Administration is taking over the domain naming authority for government users that seek addresses with the .gov extension. But who will take over the remaining naming responsibility is uncertain.

The administration's plan, he said, will draw a general outline. More time will likely be needed to set a final action plan, Irving said.

Appearing before the House subcommittee last month, Joseph Bordogna, acting deputy NSF director, said his agency should not be responsible for the domain name system any longer.

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"We are getting increasingly worried about having oversight over something that is really not our statutory responsibility," Bordogna said. "We want to move our energies to another frontier. NSF is not the proper place to have that oversight."

Bordogna said NSF was well qualified to oversee the project when it started because many of the domain name users were from the research and education community.

"Today, the vast majority of domain name registrants are commercial interests whose activities go far beyond the research and education community that NSF is chartered to serve," he said.

The National Science Foundation, one of the founders of the Internet, signed a five-year cooperative agreement with Network Solutions Inc. of Herndon, Va., in 1993 to handle domain name registration in the United States [GCN, Aug. 11, Page 6].

Bordogna said NSF wants to cancel the contract when it expires March 31, but will agree to extend it for only six months as stipulated in the contract to let the administration work out a sound transition plan. Irving said NSF may have to do that because it is unlikely that a workable transition plan will be ready before NSI's contract expires.

Answering a question from the subcommittee's chairman, Rep. Charles Pickering (R-Miss.), Irving declined to say whether Commerce would like to be the lead agency in coordinating the transition.

Instead he called on industry to play a more active role.

"This should be a private sector initiative. We've got to get to that point. Frankly, I am a little bit concerned about their lack of participation," Irving said.

Irving said Commerce issued a request for comments July 2 on the transition plan. He said the department has received 430 comments, amounting to 1,500 pages, from around the world. The comments are available on the World Wide Web at <http://www.ntia.doc.gov>.

He said the comments support private-sector handling of the domain naming process and called for opening it to more competition. He also said many of the responses "warned that continued treatment of the Internet as a U.S. asset could provoke a negative reaction from foreign governments."

Irving said the U.S. government is working with the Internet Assigned Numbering Authority, the International Ad Hoc Committee and the World Intellectual Property Organization to avoid such a conflict.

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INTERNET

NSF bows out of domain names

The National Science Foundation will stop assigning domain names no later than March 1998, the agency announces.

BY CNET NEWS STAFF / APRIL 23, 1997 5:45 PM PDT



The National Science Foundation will bow out of assigning domain names no later than March 1998, the federal agency announced today.

In response to an internal report generated in February and made public today, acting deputy director Joseph Bordogna said the NSF will not renew its InterNIC agreement with Network Solutions, the private company that assigns global top-level domains such as ".com" and ".org". Network Solutions' agreement ends in March 1998, but the NSF said both parties could choose to end it earlier.

Instead, the NSF will "focus its attention on the challenges and opportunities of the next-generation Internet in support of education in science and engineering," Bordogna said in a prepared statement today.

Just what will become of the domain name-assigning business handled by the InterNIC, however, is unclear. Bordogna seemed to indicate that other than tying up details with Network Solutions, the NSF was washing its hands of the affair.

"The long-term issues raised by the report may indeed require additional government oversight. We are referring the OIG report to appropriate policy-makers in the Administration for consideration," Bordogna's statement read. "NSF is confident the Internet community and others will eventually develop mechanisms to handle Internet registration without NSF's involvement."

The White House last month assembled an informal interagency task force chaired by the Office of Management and Budget to study the domain name issue. However, the report's release and

Bordogna's comments caught the White House flat-footed. The office of Ira Magaziner, who heads up President Clinton's policy on the Internet and electronic commerce, hadn't seen the report today. A spokesman said he couldn't comment until Magaziner and others had time to review the implications.

Underscoring the NSF's attempt to distance itself from the domain name fray, Bordogna avoided evaluating the internal report's conclusions. It suggested, among other things, keeping domain name oversight within the federal government and funding that oversight through excise taxes levied on domain name registrars.

In his reply, however, the NSF official mentioned two of the three competing plans to privatize domain name registration. Though he didn't say the NSF favored one plan over another, the International Ad Hoc Committee (IAHC) was described glowingly, Network Solution's recent plan was mentioned briefly, and the independent Enhanced Domain Name Service (eDNS) Coalition was left out altogether.

IAHC Chair Donald Heath took today's announcement as an endorsement of his committee's plans. "To me this says only one thing," said Heath, who is also president of the Internet Society. "This is NSF's way of saying that domain names should be handled by the IAHC."

If the White House or another agency fails to step in and regulate domain names, Heath reasoned, authority over the domain name system would fall to the IAHC, which includes the Internet Assigned Numbers Authority (IANA). IANA is a group of engineers who have historically cared for and fed the servers that make the Internet domain name system go.

However, Heath may be challenged. Network Solutions has indicated in the past that it believes that the databases underlying the domain name system are the company's intellectual property. The Federal Communications Commission, which has also begun studying the issue at the urging of Internet and telecommunications companies, may also step into the vacuum of authority created by NSF's projected departure. In that case, "I think the government's going to support the IAHC plan. They don't have any choice," Heath said.

Representatives from the FCC and Network Solutions didn't return telephone calls today.

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ICANN History – Transcript of an open meeting held during APRICOT 98 on the 17th February 1998, in Manila, Philippines (Part One)

Posted on February 17, 1998 by Barry Greene



(Last Updated On: February 25, 2018)

This is part of the ICANN's history. It is a transcript of an open meeting held during [APRICOT 98](#) on the 17th February 1998, in Manila, Philippines (Part One)

Transcript provided by Ms. [Laina Raveendran Greene](#)

Record of discussions with Mr. Ira Magaziner with the APIA Board and members, in an open meeting held during APRICOT 98 on the 17th February 1998, in Manila, Philippines

- Attendees were about 70 persons, which included:

The APIA Board members:

Dr Jin Ho Hur, Chairman (Inet, Inc, Korea)
Mr Roger Hicks, Co-Chair(Clear Communications, NZ)
Mr Pindar Wong, Secretary (Verifi, Hong Kong)
Dr Toru Takahashi, Treasurer (Tokyo Internet, Japan)
Dr. Tommi Chen, (Asiapac.net, Malaysia)
Mr. Barry Greene, (Cisco Systems)
Prof Li Xing, (CERNET, China)

Advisory Board members:

Mr. Ole Jacobsen, (Cisco Systems)
Mr David Conrad, (APNIC)
Mr Bob Collett, (CIX)
Mr Bill Manning, (USC/ISI)

APIA Secretariat:

Ms Laina Raveendran Greene, Secretary General, (GetIT Pte Ltd)
Mr Steve Silver, (GetIT Pte Ltd)

APIA members:

Ms Gigi Wang (Ascend Communications)
Mr Paul McNulty (AUNET)
Mr Izumi Aizu
Mr JR Contreras

Dr. Hur, Chairman of APIA Board- Thanked Mr. Magaziner for coming to our meeting and spending time with us discussing the Green Paper. I would suggest that Mr. Magaziner present some background to the paper.

Mr. Magaziner- We will need to take notes for this meeting, which will have to be posted on the US Government website.

Since no provisions were made for this Ms Laina Raveendran Greene, Secretary General of APIA Secretariat and Mr. Steve Silver of APIA Secretariat made some notes.

Mr. Magaziner- The US government has legal authority over DNS, and the root servers for historic reasons. It has been run by John Postel and NSI. Contracts are coming to an end in December 1998, and the US government wants to end its authority over this, but the rational is to do this in a way that is responsible. There are large number of stakeholders; establishers of the Internet, commercial interests, and governments around the world, and the idea is to design a way to get away from this authority by

having a bottom-up approach. Different private groups such as the IETF, APNIC, RIPE, IAB, etc. are private groups that should make up this group. IANA would move to this group, then continue to manage the domain names and numbers. There also needs to be a structure for protection against law suits, i.e. basically private bodies with formalized legal structures, with guides and incorporated. Last spring in 1997, to work towards this private/competitive systems, the US government issued an RFC and received 450 e-mail comments. We have considered all these comments. Over the November and December period alone, we have received over 1,000 e-mail comments per week and has held a series of meetings. The outcome of all this is the Draft Green Paper, which can be further revised. The US government is humble and can see weaknesses in the suggestions. The reason for today's meeting is to receive Asia Pacific comments, and hope by end of March 98 to receive comments.

Mr. Wong- To give you a quick background of APIA's activities in this area, we have been involved in looking at Internet Governance since early last year, and submitted our comments to the NOI in August. We also attended that WIPO meeting on trademarks and domain names, and most recently attended the Washington DC Executive Summit on Internet Governance.

Mr Hicks- There are enormous variations in viewpoints from this region, but two basic points are: 1) trademarks should not be the main issue. Trademarks should not equal domain names, but rather there should be proof of actual infringement, and 2) Jurisdiction issues- register with registrars who are willing to accept/or not accept names.

Mr Wong- What is the current state of discussions?

Mr Magaziner- We post everything on the website so that everyone will know what is happening. All material is made available to everyone.

Question from audience (Japan)- I am an IETF/ISOC member. ISOC has the authority to manage root domains. ISOC/IAMA should be settled in the USA, and ISOC should manage the root domains.

Mr Acascina (UNDP)- To have the deadline for decision making as the end of March, may be a little unrealistic. The process to get all stakeholders involved will take a lot longer and many countries are only just getting involved.

Mr Magaziner- What we are setting up is a private organization with a global Board, and the US government will be turning over authority to it. The structure will change and evolve over time. We have to find the balance between waiting for 1-2 years for the right answer, and meanwhile have the US government in control, NSI monopoly extended, and delay of competition. Decided to take the first step and have the US

government turn over the authority to a private entity. This entity can then evolve and be more broadly representative. Other organizations/governments will still have an opportunity to participate.

Mr JR Contreras- Concern over who represents whom. Financing is a problem for companies from countries such as the Philippines, and therefore those who get to participate in gTLD may not be representative.

Mr Magaziner- Stakeholder groups should not be based on money. These not-profit organizations should nominate people to be on the Board, and this should have no direct relationship to commercial interests. Therefore it was also proposed to have user organizations to nominate individuals to the DNS Board.

Ms Raveendran Greene- We had a discussion over your paper during the course of the policy tutorial that I conducted over APRICOT 98, and we noticed that there are two fundamental issues in your paper that are being dealt with. For this we would like to know what the rationale behind each is. Firstly, for the creation of the new organization, why was a corporate structure chosen, and why incorporate in the US? Some people see this as a way of keeping US control over Internet Governance. Secondly, you introduce the concept of creating 5 new TLDs and having separate registries each having one TLD to compete with each other, why this monopoly and why competition in registries? The CORE apparently looked at this long and hard and decided that competition in registries is not the way. Comments?

Mr Magaziner-The rationale had more to do with the US government wanting to create a stable organization, and getting out as soon as possible. Since all the major players are already in the US, it made sense to incorporate in the US. This is only for a start, the organization can always be moved outside the US once it has formed. For now, John Postel, DNS root server, IANA, and users are all in the US. The international aspect is kept by having this International Board of Directors. This way the control of the organization is widely distributed.

As for the registry issue. There are many pros and cons. The pros are that a not-profit registry has advantages with coordination and for not commercializing it too much. The cons is that it does not stimulate innovation and there is no incentive to be efficient. There should be limited competition. In general, the US government would have preferred not to get into this at all. They would have preferred to set up the new organization and have NSI to give the DNS Root A server, etc. over to this new organization. The problem is that if we do nothing now, we may be perpetuating NSI's monopoly longer and they may become stronger. Have to allow new TLDs in this transition period, while limiting it in some way. There needs to be some rules over who gets what. Under US law, John Postel cannot favour one commercial entity over another, and he could go to jail as a government official if he does this. There needs to

be some objective process that is defensible. This has been said to CORE and other registries.

Ms Raveendran Greene- The other point raised in our discussion was why is the US government involved in this policy? In fact, some individuals from the POC felt strongly that John Postel is not a US government contractor. They feel that he was contracted only to do research work, not to run domain names and IP addresses. Some want to say he was only contracted to do IP addresses and not domain names, and domain names were done under his own initiative not under a US government contract. Any comments?

Mr Magaziner- While the US government may not dictate to John Postel what to do, he is a government contractor. The US government did not want to get too involved, but they have the legal responsibility. In fact, in recent suits against John, he was advised by his lawyers and he put in his defense that he was indemnified as a US government contractor and was only acting on behalf of the US government.

POC people and IAHC has certain goals, 1) setup of a private/nonprofit organization, 2) to remove NSI's monopoly and 3) forcing NSI to share and turn over the root server and database.

Dr Takahashi- CORE registrants have already put up money, and it is unfair to dealy.

Mr Magaziner- The goal should be to get NSI to a competitive playing field. I would welcome suggestions on how to create this competitive playing field, whereby other registries can compete and commence.

Mr Conrad (APNIC)- You seem to imply that the database will be held by the not-profit organization.

Mr Magaziner- The ownership of the names will lie with the new organization. There could be licenses under certain conditions.

Mr Conrad- In terms of fairness, how do you see this?

Mr Magaziner- There is a need to allow registries to grow up for competition. We need to agree to NSI terms if we extend it. Why is the US government involved, is because we are trying to prevent further law suits.

Mr Jacobsen- NSI has had their day long enough, and now it is time to take it away from them.

Mr Magaziner- Will take the database away from NSI to the new organization. The US

government is worried and therefore would prefer to keep the status quo while creating the private organization

Question from the audience (US)- Have you considered getting rid of TLDs altogether and have country codes instead. This in fact lines up better with the way trademark laws work. It is really not all that hard to redo letterheads, businesscards, etc.

Mr Magaziner- Yes, we did think about this. So many people have registered gTLDs and comments from these people was that they did not want this option. The majority view to their comments was not to remove gTLDs.

Question from the audience (US)- Basically part of the problem is that the US government has mismanaged .us and therefore the .com problem.

Mr Magaziner- Moving to country codes will not solve all the problems either.

Mr Folstrom (POC)- In general, these are all issues that we have looked at: such as how to handle a registry, how to create competition, to have registrars manage and police, and issues regarding Intellectual Property Rights over gTLDs.

Mr Conrad- Do you control price?

Mr Magaziner- The balance should be found between the registrars controlling the price and the market.

Mr Greene- How to deal with international TLD disputes and to guarantee internationalization in the structure?

Mr Magaziner- Not perfect ideas, but 1) the inter-governmental structure is there to keep governments out of the picture, 2) to make a tight formula to minimize legal actions. Instead also what might work is to divide the different functions: 1) numbering functions and get organizations such as APNIC, RIPE, ARIN, and other new registries as they form involved, 2) protocol functions with organizations such as IETF/IAB (they can make nominations), and 3) the DNS function which would require user group representation (regionally based). Therefore there will be membership from members of the numbering, protocol and DNS areas. There will also be representatives from the different registries and registrars.

Meanwhile, there are other groups that do exist as Internet user-based, and we will try and get them involved, e.g. GIIIC. Will also consult initial convenors perhaps on a regional basis and global. First have to work on the Board members and process, over the year. Need to get a more formalized structure, such as maybe the IETF model, i.e. having periodic meetings with nominated functions. Could get groups started perhaps

for the first year. John Postel is currently putting these ideas out to groups such as GIIC, IIC, ISOC, etc. and on a regional basis.

Dr Chen – Speaking as an individual, there is strong Asian concern over US dominance. What if the 5 TLDs are won only by US companies- Are there some controls to prevent this from happening?

Mr Magaziner- That is a very good question. May be a problem with the 5 TLDs but see it as an interim step, once the new organization is formed it will decide such policies and how to set objective open process.

Dr Chen- Yes, but there is also a financial issue here. The region is right now down.

Mr Magaziner- That is indeed a difficulty. There were many ideas explored and discarded. Final ideas put down were not the best. Not everyone is happy with it. Some say they should be auctioned but again only the big will win. Others say it should be prior claim since John Postel had already created a process, but this will be US based. There were even thoughts to try a lottery system and that has problems, as you need to make sure the winner has technical capabilities. Lottery does not work on this issue either as you could end up with the same country winning. There were pressures to say start the new organization first and not do 5TLDs. But here again there were problems since CORE has a headstart, so has ALTERNIC and all are primarily US based. Am open to suggestions on possible process to decide who the first 5 should be. There are weaknesses as you pointed out and look forward to alternative suggestions.

Mr Aizu- I am an APIA member. This new organization you refer to is a new not-for-profit organization. While international organizations as not-for-profit may be safer from law suits, there are still chances of law suits. National organizations, and issues such as E-commerce, security etc. faces similar challenges. There are limitations of existing law systems and there is no international law system based on technology. While do not want meta-governments to be formed, there is a need for some inter-governmental involvement. In the longer term, the solutions has to keep in line with the temporary ad hoc solution.

Mr Magaziner- Good point. Yes, there will still be law suits. The only questions is to set up a structure that is well covered that the first law suits will fail. This will discourage future law suits. Therefore there is a need to structure the organization to withstand law suits. As to the other point, on broader E-commerce issues, I believe that the industrial age paradigm of government passing laws and regulations to protect privacy, content, etc. does not work in a digital age. There needs to be instead tools available for them to protect themselves. I do not think that there will be a huge ITU, which while it may have been good for the industrial age, is not applicable for a decentralized medium and it may encroach on freedom and innovations. Instead, we may see a series of private

not-for-profit organizations such as the IETF, IAB and others for new numbers of players and other stakeholder bases. As they evolve, governments will need to evolve legal recognition of them. Hope to develop this concept further, such as getting governments to recognize IAB, IETF, etc. Have been studying this for two years now, and am not quite sure where this is headed. In any case, all are headed towards a new legal and economic paradigm for the digital age.

Mr Aizu- Difference between government and private sector may not be so clear around the world. The solution may be private initiated but if government support is withheld, since they do not understand the new functioning of the new reality, then they will not get far with governments. Also, governments may go ahead and pass their own rules, as seen with the Malaysian cyberlaws.

Mr Magaziner- I have visited 22 countries so far to promote new style for this new reality, i.e. to ask them not to act. They have made mistakes as the US had with the CDA, and the US understands that this was wrong. The purpose of the discussions with them, however, is to say that governments need to keep a hands-off and not pass laws e.g. privacy, content, etc. They need to see a new way of things being done. The US government believes that there will be more than a billion people on the Internet by the year 2005. The Internet will be a main economic engine for growth. This will include IT and E-commerce. Those who try to overregulate are going to fail and be left behind. Those that realize that to grow they must be free, will succeed.

Mr Aizu- Do you think they will follow?

Mr Magaziner- Discussions with MITI and others, shown that they understand policies are becoming similar.

Mr Wong- These are all good conversations. As a Board member, I want to understand how we can carry this forward.

Mr Magaziner- That will depend on the reactions we receive. The first step is taking in comments, posting them on the web over the next 30 days. Depending on what we get, we may start all over again if people think it is all bad. But if they agree, but suggest changes, we will work on this and build consensus and come out with another draft and another if needed. Of course, there is no 100% consensus on the Internet, but am looking for just enough consensus. This can be a starting point to move forward. Right now, there already seems to be some consensus i.e. 1) people want the US government to move aside, 2) most agree that it should be a private not-for-profit organization and 3) most agree that NSI is a monopoly that should be ended and competition be introduced. The longer we delay, the longer the status quo will remain in place. Therefore will proceed ahead depending on what they get, may not even need 3rd or 4th drafts.

Mr Wong- How can we best structure our response.

Mr Magaziner- It is best if you represent your constituencies. It will provide wider input.

Ms Raveendran Greene – The comments we made to the NOI, were drafted after input from Board and members, then circulated for further comment. Only after receiving consensus did we hand it in.

Mr Magaziner- Good.

Question from audience (Japan)- Are you trying to reinvent ISOC? Do you know what ISOC is and how and why they were founded?

Mr Magaziner- Yes, I do know what ISOC is and while it does represent some interests, it does not represent all stakeholders. It does play an important role but do not think it can represent all.

Question from the audience (Japan)- does US government represent all?

Mr Magaziner- No and it does not claim to do so. We are looking to create a body that broadly is representative enough of these stakeholders and issues. If ISOC is in fact viewed by all to be broadly representative, then we will use ISOC. That is however, not the input we have been hearing. Of course, the easiest is to use an already existing organization rather than creating a new one. But it does not appear that we have one.

Mr Hicks- You mentioned that you talked to many different governments- are governments supportive of your approach? Most governments have not focused on this issue until recently. Those that have focused, agree that it should be more international and should not be controlled by the US government. Others feel that governments should run it and they want to take it over.

Mr Magaziner- The US government is not keen to participate in an inter-government body. We will see if we get public comments that say otherwise. Whatever the organization, it should be broadly representative and be international,

Mr Hicks- In New Zealand, we tried to just open the gates and found that it does not automatically result in competition. Even in the US, it was done in a careful way. A careful process is the right way.

Mr Magaziner- If we just walk away, a dominant player will take over and get a government sanctioned monopoly. There is a need to transition to a market approach.

Mr McNulty- You have been going around to governments and ask them to stay away

from intrusion, yet the US does make laws on the Internet. Why not get rid of all gTLDs if it would help suppress the issue. This would not be an imposition or intrusion on the rest of the world, as most may be in the US e.g. .com,.net,.org.

Mr Magaziner- yes that would have been a good strategy 4 or 5 years ago. Not now.

Mr McNulty- Yet, if introduce other gTLDs, just creating a money making opportunity.

Mr Magaziner- Even within countries, same issues over domain names come up. They too have a designated monopoly as John basically said "You are it". This leaves a unsatisfactory situation for most countries. Therefore even with nTLDs, they will need an international not-profit structure to start off with.

Mr McNulty- You are right.

Mr Magaziner- Same set of issues with gTLDs.

Mr McNulty- Do not see how you can level the playing field with just introducing more gTLDs.

Mr Hicks- Trademark lawyers have stated that if there are more gTLDs then they will just have to register more to protect their clients. Why not let them create .ibm, for example.

Mr Magaziner- That would be going in the opposite direction. Some want more TLDs e.g. acme hardware, acme pictures, etc. want to be able to have acme.com. Others say no more than 1 or 2 more. Yet another group says does not matter, since the directory services will make the debate go away. Hope that will happen soon but for now, cannot really see which is the right answer. Basically therefore it was a compromise reached from these differing positions, proceed and then let reality take over. Meanwhile, a stakeholder based organization can play an oversight role. For now, hard to say which is best. CORE would say need new gTLDs, and trademark lawyers do not want more, hopefully directory services will take over anyway.

Question from the audience (Hong Kong)- Why are you making your life difficult by trying to do TLD and then creating a new body. By this you will be leaving the new organization with the mess. Would it not be best to set up the new organization and say that it will decide.

Mr Magaziner- Yes, that would have been the easiest thing to do. However, CORE, IAHC and ISOC argued against that. There are already about 88 registrars under CORE, an any delay would destroy their business models. They say it will not help make competition work. That is why we added the TLDs.

Question from the audience (Hong Kong)- Adding new TLDs in the meantime does not give nTLDs a chance.

Mr Magaziner- Good point. If people say we should not add TLDs but work on the new organization, and let it debate it, then we will.

Question from the audience (Hong Kong)- Discussion on TLD, 6 months ago not of that point of view as did not see profile.

Mr Magaziner- When review input, will reconsider.

Question from the audience (India)- Problems have been trademark problems. I know we cannot run away from that even with nTLDs. Can you instead solve it as an engineering rather than a political issue, i.e. send it back to IETF. Domain names should not be related to trademarks. Why don't we forget about domain names, do away with TLDs. Not interested in IP or domain names. There should be a directory service to map company names with url. Prefer to remember company names than name ibm.com. Feel that urls are not user-friendly and .com is indeed a very primitive way of finding an organization.

Ms Raveendran Greene- Yes, in fact back in February 1997 there was a paper put forward by Paul Vixie to do away with domain names and go back to numbers. Unfortunately, trademark lawyers and David Maher in particular convinced him that the ship had sailed on this issue, so he pulled back his paper. Many of us, feel that it was a pity that he did not pursue this or other alternative ideas.

Question from the audience (India)- Go back to company names, not even numbers. It still can be done.

Question from audience (Singapore)- The new TLDs will be handed over to the new organization with all the problems related to it. Many people see that the real problem is that the US government allowed NSI to charge US\$50. What they should be doing is not adding new gTLDs but leveling the playing field with NSI first and incorporate the new IANA. Get rid of the NSI problem first.

Mr Magaziner- Did not designate NSI, but had an open bidding process. Open bid to all, therefore legally it was OK. Yes, it is fair to say that this was the problem because NSI charging policy affected a broad Internet community. Could indeed explore making NSI a not-for-profit organization which only has cost-based charges. This process could involve the Department of Justice and after this competitive registries could be set up. If do that, may not need new TLDs, the new organization created can decide. Question to POC however, if the US government does that would CORE registries feel cheated?

Mr Folstrom, POC- Yes. Registrars have invested money in creating new registry. Do want to get on with new registrations because of money. Some people may feel that NSI is the problem with a solution. Second problem is currently a problem with dispute resolution process.

Mr Magaziner- That can be solved. To get around that IAHC and POC got comments. There should be nTLDs etc. who felt that adding 7 and not more, is not the solution. Part of that was because browsers need .com. Have heard that alternative solutions are being developed. Question would be if we make .com, .net, .org, not-for-profit and then we don't create new TLDs now but wait for new organization, and new organization can suggest new solutions, would this be acceptable?

POC- CORE would like to have new TLD because registrar have gone so far ahead and are waiting to go into business.

< b>Question from audience (Singapore)- The new IANA could do that. Do not see the need to get 5 TLD in transition period. NSI makes money and this should be stopped first.

Mr Magaziner- That can be done. Issue is the CORE and ALTERNIC issue. CORE invested money for new TLDs etc. and registrars are waiting to do business. May not of course, be a compelling argument or is it?

Question from audience (Singapore)- New IANA is the best judge of this. Investment returns etc. can be decided by the new organization. Please don't add other problems to the new organization which need not follow. Create the new body and hold off the rest and stop the NSI problem.

Mr Magaziner- Please submit your comments.

Dr. Hur- At this juncture, we will not want to hold Mr. Magaziner any longer and we will resume tomorrow morning at 7am. Laina will give a quick wrap up for now.

Ms Raveendran Greene: Mr. Magaziner, we really appreciate your taking this time to come be with us during APRICOT 98. Your efforts to be here with us is an expression of your commitment to get universal input to your paper. We have had a very interesting debate tonight and it would be hard to summarize it all, suffice to say that we at APIA at a cursory reading are pleased at the direction you have taken. To a large extent, it would appear that you have taken our points into consideration. We will further study the paper and hope to provide a formal submission soon. Thank you once again for your time and for your openness.

EXHIBIT JZ-25



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Comments [Docket No. 97061337-7137-01]

Registration and Administration of Internet Domain Names -- Summary of Comments [Docket No. 97061337- 7137-01]

Topics:

- [Domain Name System](#) [1]

Date:

August 18, 1997

SUMMARY OF COMMENTS

Registration and Administration of Internet Domain Names

[Docket No. 97061337-7137-01]

BACKGROUND

The rapid growth and use of the Internet has led to increasing public concern about the current system for registering and managing domain names, the familiar and easy-to-remember names for Internet computers. In response, various private sector groups have proposed systems for allocating and managing generic top level domains (gTLDs).

The Government has in the past supported the privatization and commercialization of the Internet and believes that this transition to private sector control should continue. The Government is studying various private sector proposals to establish systems to allocate and manage gTLDs on the Internet. In addition to the various proposals, the government is studying the underlying issues to determine what role, if any, it should play in management of Internet domain name systems (DNS).

On July 2, 1997, the Department of Commerce issued a Request for Comments on the Registration and Administration of Internet Domain Names in order to ascertain the views of the public regarding various DNS management proposals as well as the underlying policy issues.

The comment period closed on August 18, 1997, and we received over 430 comments. Comments have been reviewed and posted to the National Telecommunications and Information Administration (NTIA) site on the World Wide Web. In addition, the comments have been available for review in the public reading room at the Department of Commerce.

This paper briefly summarizes comments submitted. The text from the Request for Comments (RFC) issued July 2, 1997 appear in **bold** type. Responses are summarized below the RFC text. **This summary reflects the tone and thrust of comments received generally, but is not intended to summarize all comments received in their entirety.**

A. Appropriate Principles

The Department of Commerce sought comment on the principles by which it should evaluate proposals for the registration and administration of Internet domain names. In general, respondents supported the proposed principles. A number of commenters proposed revisions to the principles presented, and some suggested additional principles. A small number of respondents opposed or disagreed with one or all of the principles entirely.

a. Competition in and expansion of the domain name registration system should be encouraged. Conflicting domains, systems, and registries should not be permitted to jeopardize the interoperation of the Internet, however. The addressing scheme should not prevent any user from connecting to any other site.

The overwhelming majority of respondents agreed with this principle, stressing that even as competition is introduced, DNS mechanisms should remain stable, and that domain names must be universal and, ultimately, portable. One organization suggested that while competition is long overdue, change should be gradual and controlled. Others cautioned that the legal rights of trademark holders should not be sacrificed for the sake of competition, and that we should examine non-competitive systems where they have been shown to work. Several respondents commented that competition at the "root" level was not feasible.

b. The private sector, with input from governments, should develop stable, consensus-based self-governing mechanisms for domain name registration and management that adequately defines responsibilities and maintains accountability.

Most respondents agreed with this principle, although many noted that the government had a role fostering private sector leadership. Some cautioned, however, that the phrase "input from governments" was vague and should be clarified or limited (e.g. to antitrust enforcement). The "private sector" should be understood inclusively, to mean, in one respondent's words, "the diversity of Internet communications providers and Internet speakers." One commentator suggested that self-governance should be approached through a system of multi-tiered contracts.

c. These self-governance mechanisms should recognize the inherently global nature of the Internet and be able to evolve as necessary over time.

The principle of globalism received strong support. Many observed that the Internet has grown from its U.S. roots into a global medium. The argued that this transformation should be reflected in the internationalization of the Internet's administrative bodies. Many commenters also believed that the continued treatment of the Internet as a "U.S. asset" could provoke a negative reaction from foreign governments and businesses. One commentator noted, however, that the inherently global nature of the Internet should not be used to justify an inadequate, closed, or rushed decision making process.

d. The overall framework for accommodating competition should be open, robust, efficient, and fair.

Most respondents supported this principle. One suggested that further definition of "open, robust, efficient, and fair" was needed, and others suggested that this principle was too broad to be particularly helpful.

e. The overall policy framework as well as name allocation and management mechanisms should promote prompt, fair, and efficient resolution of conflicts, including conflicts over proprietary rights.

Most commentators supported this proposal, although several noted that some trademark disputes would be best resolved by courts applying traditional trademark principles.

f. A framework should be adopted as quickly as prudent consideration of these issues permits.

Respondents expressed more concern about getting the "right" answers than about moving quickly. Several stated that consensus achieved through a democratic and open process is more important than speed. Nonetheless, some respondents cautioned that prompt action may be needed to avoid fragmentation of the Internet.

g. Additional principles.

Several respondents suggested additional principles:

-- Policymakers should consult widely with the representatives of affected stakeholder groups and ensure that processes are inclusive and that creditable views receive appropriate consideration. (CIX, Domain Names Rights Coalition, EFF)

-- Modifications to the registration and administration of gTLDs . . . should be responsive to market forces. (CIX)

-- The name-space is a public resource. (EFF)

-- The namespace is a private resource subject to reasonable limits developed and agreed to by the Internet community. (CIX, NSI)

-- International interoperability of DNS should be ensured. (CommerceNet)

-- The Internet must remain accessible as a communications medium and to make information available to entities of all types and sizes. (CommerceNet, Domain Names Rights Coalition, EFF)

-- The Administration of the name-space should provide for name portability. (EFF)

-- Lack of consensus about intellectual property should not impede progress in other areas. (EFF)

-- No government should reserve the right to pass laws or make policies applicable to persons or resources not within its physical territory. (D.R. Johnson)

B. General/Organizational Framework Issues

The government sought comment on general and organizational issues related to the domain name system. Respondents frequently mentioned the global nature of the Internet and the need to move from a US dominated position. Proposed solutions often inferred a US government role in "fixing it and keeping it fixed," however, supporting the notion that the government has an important role to play in transitioning DNS from government to private sector control.

1. What are the advantages and disadvantages of current domain name registration systems?

Numerous respondents mentioned that the advantage of the current system is that "it works" and, so far, government has not been intrusive. One commenter asserted that support for the current system exists in some measure simply because it is the only system that the commercial users have ever known.

Respondents cited the lack of competition as the primary disadvantage of the current system. This was most often identified as a problem by commenters, who in some cases also questioned whether the current contractor, NSI, adequately followed or enforced rules established by IANA in RFC 1591, Domain Name System Structure and Delegation.

Respondents questioned the ability of the existing systems to meet expanding use of the Internet, noting that while "the systems may have worked well initially, they must be replaced with systems designed for the size and complexity of today's and tomorrow's networks."

Respondents also cited the potential for trademark dispute as a significant disadvantage of the current system. This group asserted that the current system uses ineffective prescreening and dispute resolution mechanisms that have resulting in widespread abuse of the system by domain name speculators and trademark infringers who have easy, inexpensive access to the system and can register virtually any domain name.

With respect to trademark issues, commenters also noted that it has become increasingly difficult to select a domain name that is not already in use by another business. Respondents noted that the current system consists, more or less, of a single gTLD (i.e., .com), and suggested that the perceived scarcity of "good names" might decrease if additional meaningful

gTLDs were available. Many of these respondents cautioned, however, that this proposal should be carefully studied, as the risks associated with the establishment of additional gTLDs may outweigh this particular disadvantage.

2. How might current domain name systems be improved?

Most respondents enthusiastically endorsed the introduction of competition -- multiple registrars that share a common database -- to improve the current DNS. Others suggested that additional non-discriminatory directory services would reduce the importance of mnemonics and reduce, if not eliminate, trademark issues. One respondent proposed the creation of a bottom-up web of contracts to ensure stability and enforcement. Others cited the need to improve security to minimize infiltrations of the systems and attacks on root servers and other vulnerable network points.

Many respondents supported the creation of an alternative dispute resolution process to mediate conflicts of all sorts. In this global environment, such a solution was considered more appropriate than resolution by individual courts of the relevant jurisdictions.

Commenters disagreed about the appropriate structure of DNS going forward. Some stressed that top-level domains are a global public resource and must be maintained as such. Others argued that generic TLDs are a private resource for individual businesses to develop exclusively. Nonetheless, commenters agreed that no single company should be allowed to monopolize domain name registrations. Commenters that mentioned the IAHC proposal, more often than not, supported it (but often for differing reasons).

A number of commenters stressed the importance of domain name portability. The technical implications of this issue were not fully discussed and certainly not resolved.

With respect to the future of existing gTLDs, administered under a cooperative agreement between the National Science Foundation (NSF) and Network Solutions Inc. (NSI), those who addressed the issue argued that the public should retain ownership of the contents of the ".com" database and the software that NSI wrote under the cooperative agreement. Some argued that the U.S. government should extend its agreement with NSI, however, if a stable system is not in place by April 1, 1998, when the cooperative agreement expires.

3. By what entity, entities, or types of entities should current domain name systems be administered? What should the makeup of such an entity be?

The IAHC plan to revise the gTLD system received more support than not, including, however, support from parties that were involved in drafting the plan. The principles behind the plan received support from some individuals and organizations such as the Coalition for Advertising Supported Information and Entertainment (CASIE) and the Electronic Frontier Foundation (EFF). Jon Postel said: "I firmly believe that moving forward with the IAHC plan (in the general sense) is in the best interest of the Internet community, including the users, business, and the technical operation of the system." Respondents expressed some reservations about the details of the proposal, but generally did not object to its fundamental principles.

Those who did object to the IAHC plan argued that it is an attempt to improperly assert control over the Internet. The plan is an "example of bypassing traditional governance structures and the protections they provide to smaller voices seeking to participate in policy debates," said one commenter.

Respondents identified the root domain database and the root domain servers as the core of the domain name system. Because they are essential to all Internet users worldwide, commenters urged that these elements of the system be kept free of governmental and commercial pressures. The system should be governed by a large cross-section of the industry itself, with input from government. Commenters felt that the size and makeup of the iPOC and any associated organizations must be designed to ensure that any policies promulgated represent a true Internet community consensus. And, the core database for use in assigning and prescreening all gTLDs should be constructed and maintained by a central entity and shared on a real-time basis.

4. Are there decision-making processes that can serve as models for deciding on domain name registration systems (e.g., network numbering plan, standard setting processes, spectrum allocation)? Are there private/public sector administered models or regimes that can be used for domain name registration (e.g., network numbering plan, standard setting processes, spectrum allocation)?

Some said that the "Internet defies a conventional regulatory approach and there are no existing models that are appropriate as a basis for a new domain name registration system since the Internet is a unique medium."

Others said that existing technical standards setting processes offer a potential model for the decision-making process because they are made up of, or consider the input of, all parties with interest in setting a particular standard.

Others encouraged international governmental cooperation to harmonize the legal context within which the domain name registration process operates.

What is the proper role of national or international governmental/non-governmental organizations, if any, in national and international domain name registration systems?

Respondents overwhelmingly favored private sector governance of the domain name system, and urged government to take a back seat in the registration and administration of Internet domain names. Most respondents recommended adoption of a self-regulatory, market driven approach to Internet governance. This approach should be open and flexible, and representative of the Internet community. All stakeholders must be consulted in any decision-making process. Jon Postel also said: "[t]he role of government should be to foster a fair system of self-governance for the Internet that embraces open competition where possible on an international scale." David R. Johnson, chairman of Counsel Connect and co-director of the Cyberspace Law Institute, called on government to allow the marketplace to govern the

Internet through a bottom-up web of contracts. The U.S. government should make it clear that attempts to set up this contractual regime themselves are not violations of antitrust law, but "the proper role of governments is to enforce such agreements unless they violate antitrust laws or other public policies."

Commenters had more varied and even contradictory attitudes toward the role of international, inter-governmental organizations (IGOs), especially the ITU. Some commenters expressed deep misgivings about IGOs taking a leading role in Internet governance. Many commenters viewed organizations like the ITU as unaccountable, unelected, and unlikely to consult with the Internet community. Others criticized it as moving too slowly to address rapidly developing Internet issues. The majority of non-profit groups and corporations voiced either vague distrust of IGOs or highly qualified support. It is clear that many commenters were concerned that IGOs might misuse any power they might be granted.

Still, a sizeable minority of commenters, many of them individuals or professionals familiar with IGOs, saw the United Nations and subsidiary bodies such as the ITU as the appropriate organizations to assume control over Internet governance. They tended to argue that international organizations provide ready-made fora for reconciling competing national and commercial interests. International organizations were also seen as exerting a useful check on domination of Internet governance by the United States.

Should generic top level domains (gTLDs), (e.g., ".com"), be retired from circulation? Should geographic or country codes (e.g., ".us") be required? If so, what should happen to the .com registry? Are gTLD management issues separable from questions about international standards organization (ISO) country code domains?

Several commenters advocated expanded use of the ".us" domain. Iperdome, Inc., suggested moving all existing gTLDs to a second level of the .us domain. Others said that the use of country codes alone as top level domains causes problems. First, an entity might not want to be associated with a particular country. Also, root server operators would be expected to decide what was a country. Finally, trademark owners would be forced to monitor and protect their marks under each country code as well as under each gTLD.

Most respondents advised against retiring existing gTLDs. Retiring gTLDs was thought likely to cause confusion and increase costs to registrants associated with changing their domain names and suffering the loss of valuable goodwill. "Little is to be gained, and much would be lost, by the elimination of such domains," said one commenter.

Are there any technological solutions to current domain name registration issues? Are there any issues concerning the relationship of registrars and gTLDs with root servers?

Most respondents indicated that while there are no technical obstacles to solving DNS problems, it is not really feasible to separate technological and administrative solutions. Technology is needed, however, to implement a competitive name registration system involving multiple registrars in shared gTLDs. There was some disagreement about whether or not this technology already exists.

There does not appear to be any need for substantial interaction between the registrars and the root servers. Root server operators must, however, work closely with the central policy organization that defines gTLDs to ensure consistency. On the other hand, registrars must interact with gTLD domain servers because they will have to rely on these servers to pick up registration changes quickly and consistently. Most commenters felt that the technology that currently handles core gTLD databases has this capability.

How can we ensure that scalability of the domain name system name and address space as well as ensure that root servers continue to interoperate and coordinate?

Respondents generally felt that the present system allowed for enough unique names to satisfy the physical needs associated with Internet growth. The problem, however, is that the unlimited availability of unique monikers does not satisfy vanity/marketing requirements that underlie growing trademark disputes. Scaling problems in gTLDs arise from the perceived need for every business to have its own second level domain name.

Some respondents suggested that registration of firms, rather than products, at the second level would slow the growth in second level domains (e.g. "Bayer.com" rather than "Aspirin.com."), but no commenter identified an appropriate mechanism by which governments could influence that strategy for gTLDs.

Others suggested that scaling problems could be reduced if domain names were viewed and treated more like access numbers (e.g. a telephone number) rather than source indicators in the nature of trademarks and trade names. These respondents favored the development of robust directory services.

Respondents identified three essential elements of a coherent root server system: a trusted single source for root domain data, trusted set of root server operators, and effective, secure distribution of data to system administrators.

How should the transition to any new systems be accomplished?

Respondents agreed that new systems, based on forward-looking policies and incorporating new frameworks and gTLDs, should be designed and implemented. Once these systems are operational, existing domains should be moved to the new systems as appropriate.

Are there any other issues that should be addressed in this area?

Respondents to this question voiced three themes: (1) NSI's proprietary claims on the .com database should be challenged and ownership of the registration database must be clarified on a going forward basis, (2) the business processes must be documented more formally and openly than has been the case in the past, and (3) unanswered questions regarding system finance must be addressed.

C. Creation of New gTLDs

10. & 11. Are there technical, practical, and/or policy considerations that constrain the total number of different gTLDs that can be created? Should additional gTLDs be created?

The comments evidenced extensive support from the technical community for the addition of new gTLDs. The Internet Society and iPOC cited strong public demand, and support for the iPOC proposal as an appropriate "first step" in what should be a careful, incremental approach. EuroISPA felt that the addition of new gTLDs will relieve pressure on the .com space. Jon Postel proposed that new gTLDs should be added incrementally until the total reaches about 200, to provide diversity and access to simple domain names by holders of not-so-strong trademarks. The ISP's Consortium urged an unlimited number of new TLDs, including, e.g., .ibm , so that most of today's second level domains could become top level domains. Other commenters similarly favored a large increase in the number of gTLDs.

Some prominent members of the business community expressly supported the creation of new gTLDs in order to increase domain name capacity and support the growth of the Internet and electronic commerce. Other business leaders cited the increasing scarcity of new "natural identifiers" in the .com space.

Several public interest groups also favored expansion of the top-level namespace. Computer Professionals for Social Responsibility concluded that new special-purpose gTLDs should be created to allow the use of identical names in different gTLDs for different purposes. The Electronic Freedom Foundation asserted that the additional of several new gTLDs would avoid many trademark disputes. Both the Domain Name Rights Coalition and NetAction supported a large increase in the number of gTLDs.

On the other hand, trademark owners for the most part weighed in against the creation of new gTLDs. The International Trademark Association (INTA), for example, argued that increasing the number of gTLDs would increase policing burdens and would give bad actors more opportunities to infringe. The U.S. Council for International Business (USCIB) urged that new gTLDs should be allowed only after a cost/benefit analysis justifying their creation. Prince plc. asserted that the creation of new general purpose gTLDs would exacerbate trademark disputes.

Several prominent communications companies took the same position. BellSouth argued that a proliferation of new gTLDs would confuse users, increase opportunities for the selection of infringing domain names, and make it harder for trademark owners to police their marks. British Telecom asserted that the "unconstrained and unstructured" expansion of the number of gTLDs would diminish the basic utility of the DNS and increase the risk of cyber-piracy. Viacom opposed the creation of new gTLDs until "an efficient means of protecting trademarks is developed." NSI stated that an increase in the number of gTLDs could generate consumer confusion, increase the number and cost of trademark disputes, and lead to speculative activity.

12. Are there technical, business, and/or policy issues about guaranteeing the scalability of the name space associated with increasing the number of gTLDs?

13. Are gTLD management issues separable from questions about ISO country code domains?

14. Are there any other issues that should be addressed in this area?

A substantial number of commenters addressed the *type* of new gTLDs that might be created. CommerceNet suggested that the gTLDs should be sufficiently distinct that there is only "ONE logical space for a given company to inhabit as its trademarked domain name." Similarly, AOL wrote "[w]hat is the difference between the intended use of .com and .biz? Any new gTLDs that are created should be distinct enough in their intended purpose to minimize the chance of confusion as well as the need by name holders to register their domain in both TLDs. British Telecom urged that any new gTLDs be limited to specific classes of businesses, and strictly policed (e.g., .air for airlines), with qualifications to be determined by IATA. EuroISPA urged that new gTLDs correspond to specific industries or business areas.

CPSR found the concept of creating special-purpose gTLDs attractive "from the perspective of both Internet users and commercial business," but expressed concern that the specific gTLDs developed by IAHC "raise questions about global transparency and potential duplication and user confusion." Some respondents suggested specific new gTLDs including .pol (for political speech), .lib (for libraries), .sch (for elementary and secondary schools), .pers (for personal speech), and .sba (for small business).

Several commenters urged that gTLDs should correspond to the categories in an industrial classification system. AOL also suggested that any new gTLDs should include trademark top level domains" (tTLDs) such as .aol, .ibm, or .mci, "reserved for those global brand entities who wish to enhance and protect their global brands in cyberspace."

CIX, while not opposing the creation of new gTLDs, suggests that we can address the need for complementary business gTLDs by encouraging the use of ".com.us" and perhaps by "cloning" .com (that is, by allowing the use of ".com1", ".com2", etc.) to mitigate the demands for the same namespace by companies with similar names.

D. Policies for Registrars

15. Should a gTLD registrar have exclusive control over a particular gTLD? Are there any technical limitations on using shared registries for some or all gTLDs? Can exclusive and non-exclusive gTLDs coexist?

Virtually no respondents favored a system in which domain name registrars generally exercised exclusive control over gTLDs.

Most respondents indicated that, in general, registrars should not have exclusive control over a particular gTLD. These commentators believe that shared registries will protect consumers by promoting competition and enhancing choice. Some respondents noted that allowing exclusive gTLDs would create problems of "lock in" and high switching costs. Even in this group, however, commentators noted that there may be circumstances under which exclusive gTLDs are desirable. Several cited ".gov" as an example of an appropriate exclusive gTLD. (*See*, responses to Question 14, above.)

Another sizeable group of commentators favor a mixed shared/exclusive system, noting that these distinctions can serve as a useful dimension of competitive offerings, creating more choice for consumers. This group favored allowing the market to determine the optimum mix of exclusive and non-exclusive gTLDs.

In general, respondents did not believe that technology would ultimately limit creation of shared or mixed shared/exclusive registry systems. The Commercial Internet Exchange Association (CIX), however, noted that as the technology for shared registries doesn't yet exist, any transition plan should assess technical obstacles realistically, and plan accordingly.

16. Should there be threshold requirements for domain name registrars, and what responsibilities should such registrars have? Who will determine these and how?

A majority of the respondents favored establishing threshold requirements for registrars, citing the need for stability and consumer protection. Suggested qualifications involved: technical skills; operations skills and experience; and financial resources. AT&T suggested that registrars be required to submit to the jurisdiction of a single, predetermined court, and to post bond to satisfy judgments. Some suggested that registrars should be required to escrow or somehow make their full databases available to protect consumers in the event of insolvency or incompetence. A number of respondents cited the IAHC requirements approvingly, although the Asia & Pacific Internet Association (APAI) described them as "too U.S.-centric." The iPOC itself cautioned that threshold qualifications should be kept to a minimum in order to promote diversity and participation in the DNS by developing countries.

A sizeable minority of respondents asserted that the marketplace should determine whether and what requirements and responsibilities a domain name registrar should have. Registrants, in this group's view, should be free, after full disclosure, to deal with any registrar they choose. These commenters appeared to assume a system in which the failure of one registrar would not effect domain name registrants outside of the failed system.

Very few respondents commented on who should determine what qualifications are necessary to become a registrar and how these qualifications should be determined. Those who did respond generally referred to IANA or its successor.

17. Are there technical limitations on the possible number of domain name registrars?

Very few respondents thought that technology would limit the number of registrars who could

compete in the DNS system. Several noted, however, that the existence of too many registrars could make the system more difficult to manage.

18. Are there technical, business and/or policy issues about the name space raised by increasing the number of domain name registrars?

Respondents cited interconnectivity, interoperability, and operational issues as three areas where issues might arise in connection with increasing the number of domain name registrars. Other commentators stressed the need to pay close attention to trademark dispute resolution. Finally, a few respondents referenced consumer protection and pricing concerns. In general, however, respondents felt that these issues could be resolved and did not justify limiting the number of domain name registrars.

19. Should there be a limit on the number of different gTLDs a given registrar can administer? Does this depend on whether the registrar has exclusive or non-exclusive rights to the gTLD?

Most respondents felt that there is no need to limit the number of gTLDs that a given registrar can administer at this time. Several cautioned, however, that this issue should be revisited and the decision revised if necessary as we gain experience. CIX proposed that policy development should be deferred until we have more experience with permanent DNS structure and the market for registration services. A few respondents suggested that competition would be enhanced by limiting the number of gTLDs that a given registrar can administer.

20. Are there any other issues that should be addressed in this area?

Respondents who answered question 20 were, for the most part, concerned about intellectual property rights. A significant number of respondents called for clarification on the extent to which a registrar has an intellectual property right in the databases generated in the course of registration activities. Most implied that claims to such intellectual property rights should be rejected.

E. Trademark Issues

What trademark rights (e.g., registered trademarks, common law trademarks, geographic indicators, etc.) vis-a-vis domain names?

The comments indicate general agreement that trademark rights (registered and common law trademarks, trade names, business names, etc.) should be protected. Commenters focused,

however, on how domain names should be protected, i.e., by national courts or some other types of dispute resolution mechanism.

All commenters agreed that the national courts should remain an option for trademark protection, and indeed the technical community expressed a preference that this should be the only forum for trademarks disputes. A substantial portion of the technical community also believed that domain names are merely addresses and do not have trademark implications. However, trademark owners and attorneys indicated that they would prefer an additional Alternative Dispute Resolution (ADR) mechanism, such as the Administrative Challenge Panel (ACP) process identified in the IAHC gTLD MOU or something similar, for some kind of first level clearance to deal quickly with cyber-pirates.

22. Should some process of preliminary review of an application for registration of an IDN be required (to determine conflicts with trademarks, etc.)?

If so, what standard should be used? Who should conduct the preliminary review? If conflict is found, what should happen next? Automatic referral to dispute settlement?

There was general consensus among the commenters that there should be no preliminary review process. First, such a review would add unwanted delay to the registration process; second, most commenters did not want the registrars to review applications on any substantive grounds; and finally because the standards of review would be too difficult to establish and enforce.

Only a few respondents supported the institution of a waiting period after the filing of an application but prior to registration so that disputes could be resolved. However, because there are currently a fairly low number of actual disputes, it appears that establishing a short period after registration, during which a domain name could be suspended in the event of a conflict, would be a less intrusive procedure. There has been no trademark conflict with respect to the majority of domain names.

Please see the responses to Question 21 (above) with respect to the issues of domain name/trademark conflict and the proper forum such conflicts.

Aside from a preliminary review, how should trademark rights be protected on the Internet? What entities, if any, should resolve disputes? Are national courts the only appropriate forum for such disputes? Is there a role for national/international governments/nongovernmental organizations?

As stated above, there was consensus that national courts are one appropriate forum for domain name/trademark disputes (the same mechanism that exists currently). However,

trademark owners and attorneys are concerned about the serious jurisdictional issues of an Internet with international registrars, as well as about cyber-pirates, and hence have supported ADR.

There was no consensus among the comments regarding the role of governments or international governmental organizations. However, there did appear to be consensus that if the Internet unravels, the U.S. government should step in.

How can trademark conflicts be prevented? What informational resources could reduce potential conflicts (database of information)? How should the database be used?

There is general agreement that domain name/trademark conflicts cannot be prevented in an international arena - but they can be minimized with certain technological solutions. The commenters agreed that a searchable domain name database with up-to-date contact information would certainly be helpful for clearance purposes. There were also a few comments suggesting that a worldwide trademark registration database would be helpful to deter conflict, however it is generally agreed that such a database would be too difficult to maintain.

There was no consensus on who should maintain a domain name database.

25. Should applicants be required to show a basis for a certain domain name? If so, what information should be supplied? Who should evaluate the information? On the basis of what criteria.

While there was general agreement among the commenters that reliable contact information was necessary, there was little support for requiring that an applicant demonstrate a basis for requesting a particular domain name (e.g., the name was applicant's business or family name). Further, there was no agreement regarding what basis information/evidence (family name, corporate name, registered trademark certificate, certificate of incorporation, etc.) should be submitted. However, many commenters pointed out that requiring the registrar to assess such information was likely to slow down the process and draw the registrar into needless litigation.

How would the number of gTLDs and the number of registrars affect the number and cost of resolving domain name/trademark disputes?

Commenters generally agree that increasing the number of gTLDs would also increase the number and cost of resolving domain name/trademark disputes. There is a sizable contingent in the technical community who felt that adding as many domain names as humanly possible would eliminate any trademark problems.

There was no consensus concerning the effect of increasing the number of registrars.

This question provoked responses concerning whether gTLDs should be added, and there was

a general consensus that registries should be shared, especially the ".com" registry. In addition, there was considerable support for cautiously and judiciously adding gTLDs in the beginning of any new governance mechanism. There is concern for the stability of a system employing new technology as well as a wariness of the new governance mechanisms and the potential for a significant increase in domain name/trademark disputes.

27. Where are valid conflicting rights to a domain name, are there any technical solutions?

There was no consensus regarding a technological solution to such a situation, although several interesting ideas were submitted; using geographical indicators; using directories or a pull-down menu; adding the goods or services of each registrant into the domain name; using some international classification system, etc.

Are there any other issues that need to be addressed?

With respect to trademark issues, some commenters expressed a desire that the Internet domain name issue be kept within the U.S. until the many major issues have been satisfactorily settled (major issues such as governance, technology, dispute resolution, adding gTLDs, etc.

There is much that is not settled under the proposed plans for governance, and the public is justifiably concerned about the stability and reliability of the Internet environment in the wake of any new system of governance and new technologies for registries.

[National Telecommunications and Information Administration](#)

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EXHIBIT JZ-26



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Improvement of Technical Management of Internet Names and Addresses; Proposed Rule

Date:

February 20, 1998

Docket Number:

980212036-8036-01

[Federal Register: February 20, 1998 (Volume 63, Number 34)]
[Proposed Rules]
[Page 8825-8833]
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Part IV

Department of Commerce

National Telecommunications and Information Administration

15 CFR Chapter XXIII

Improvement of Technical Management of Internet Names and Addresses;
Proposed Rule

[[Page 8826]]

DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

15 CFR Chapter XXIII

[Docket No. 980212036-8036-01]
RIN 0660-AA11

Improvement of Technical Management of Internet Names and
Addresses

AGENCY: National Telecommunications and Information Administration
(NTIA), Commerce.

ACTION: Proposed rule; request for public comment.

SUMMARY: This document sets forth ways to improve technical management of the Internet Domain Name System (DNS). Specifically, it describes the process by which the Federal government will transfer management of the Internet DNS to a private not-for-profit corporation. The document also proposes to open up to competition the administration of top level domains and the registration of domain names.

DATES: Comments must be received by March 23, 1998.

ADDRESSES: Comments may be mailed to Karen Rose, Office of International Affairs, National Telecommunications and Information Administration (NTIA), Room 4701, U.S. Department of Commerce, 14th and Constitution Avenue, N.W., Washington, D.C. 20230 or sent via electronic mail to dns@ntia.doc.gov. Messages to that address will receive a reply in acknowledgment. Comments submitted in electronic form should be in ASCII, WordPerfect (please specify version), or Microsoft Word (please specify version) format. Comments received will be posted on the NTIA website at <http://www.ntia.doc.gov>. Detailed information about electronic filing is available on the NTIA website, <http://www.ntia.doc.gov/domainname/domainname130.htm>. Paper submissions should include three paper copies and a version on diskette in the formats specified above.

FOR FURTHER INFORMATION CONTACT: Karen Rose, NTIA, (202) 482-0365.

SUPPLEMENTARY INFORMATION:

Authority: 15 U.S.C. 1512; 47 U.S.C. 902(b)(2)(H); 47 U.S.C. 902(b)(2)(I); 47 U.S.C. 902(b)(2)(M); 47 U.S.C. 904(c)(1).

I. Introduction

On July 1, 1997, The President directed the Secretary of Commerce to privatize, increase competition in, and promote international participation in the domain name system. Domain names are the familiar and easy-to-remember names for Internet computers (e.g. `www.ecommerce.gov`). They map to unique Internet Protocol (IP) numbers (e.g., 98.37.241.30) that serve as routing addresses on the Internet. The domain name system (DNS) translates Internet names into the IP numbers needed for transmission of information across the network. On July 2, 1997, the Department of Commerce issued a Request for Comments (RFC) on DNS administration (62 FR 35896). This proposed rule, shaped by over 430 comments received in response to the RFC, provides notice and seeks public comment on a proposal to transfer control of Internet domain names from government to a private, nonprofit corporation.

II. Background

Today's Internet is an outgrowth of U.S. government investments in packet-switching technology and communications networks carried out under agreements with the Defense Advanced Research Projects Agency (DARPA), the National Science Foundation (NSF) and other U.S. research agencies. The government encouraged bottom-up development of networking technologies through work at NSF, which established the NSFNET as a network for research and education. The NSFNET fostered a wide range of applications, and in 1992 the U.S. Congress gave the National Science Foundation statutory authority to commercialize the NSFNET, which formed the basis for today's Internet.

As a legacy, major components of the domain name system are still performed by or subject to agreements with agencies of the U.S. government.

A. Assignment of Numerical Addresses to Internet Users

Every Internet computer has a unique IP number. The Internet Assigned Numbers Authority (IANA), headed by Dr. Jon Postel of the Information Sciences Institute (ISI) at the University of Southern California, coordinates this system by allocating blocks of numerical addresses to regional IP registries (ARIN in North America, RIPE in Europe, and APNIC in the Asia/Pacific region), under contract with DARPA. In turn, larger Internet service providers apply to the regional IP registries for blocks of IP addresses. The recipients of those address blocks then reassign addresses to smaller Internet service providers and to end users.

B. Management of the System of Registering Names for Internet Users

The domain name space is constructed as a hierarchy. It is divided into top-level domains (TLDs), with each TLD then divided into second-level domains (SLDs), and so on. More than 200 national, or country-code, TLDs (ccTLDs) are administered by their corresponding governments or by private entities with the appropriate national government's acquiescence. A small set of generic top-level domains (gTLDs) do not carry any national identifier, but denote the intended function of that portion of the domain space. For example, .com was established for commercial users, .org for not-for-profit organizations, and .net for network service providers. The registration and propagation of these key gTLDs are performed by Network Solutions, Inc. (NSI), a Virginia-based company, under a five-year cooperative agreement with NSF. This agreement includes an optional ramp-down period that expires on September 30, 1998.

C. Operation of the Root Server System

The root server system contains authoritative databases listing the TLDs so that an Internet message can be routed to its destination. Currently, NSI operates the ``A' root server, which maintains the authoritative root database and replicates changes to the other root servers on a daily basis. Different organizations, including NSI, operate the other 12 root servers. In total, the U.S. government plays a direct role in the operation of half of the world's root servers. Universal connectivity on the Internet cannot be guaranteed without a set of authoritative and consistent roots.

D. Protocol Assignment

The Internet protocol suite, as defined by the Internet Engineering Task Force (IETF), contains many technical parameters, including protocol numbers, port numbers, autonomous system numbers, management information base object identifiers and others. The common use of these protocols by the Internet community requires that the particular values used in these fields be assigned uniquely. Currently, IANA, under contract with DARPA, makes these assignments and maintains a registry of the assigned values.

III. The Need For Change

From its origins as a U.S.-based research vehicle, the Internet is rapidly becoming an international medium for commerce, education and communication. The traditional means

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of organizing its technical functions need to evolve as well. The pressures for change are coming from many different quarters:

There is widespread dissatisfaction about the absence of competition in domain name registration.

Mechanisms for resolving conflict between trademark holders and domain name holders are expensive and cumbersome.

Without changes, a proliferation of lawsuits could lead to chaos as tribunals around the world apply the antitrust law and intellectual property law of their jurisdictions to the Internet.

Many commercial interests, staking their future on the successful growth of the Internet, are calling for a more formal and robust management structure.

An increasing percentage of Internet users reside outside of the U.S., and those stakeholders want a larger voice in Internet coordination.

As Internet names increasingly have commercial value, the decision to add new top-level domains cannot continue to be made on an ad hoc basis by entities or individuals that are not formally accountable to the Internet community.

As the Internet becomes commercial, it becomes inappropriate for U.S. research agencies (NSF and DARPA) to participate in and fund these functions.

IV. The Future Role of the U.S. Government in the DNS

On July 1, 1997, as part of the Clinton Administration's Framework for Global Electronic Commerce, the President directed the Secretary of Commerce to privatize, increase competition in, and promote international participation in the domain name system.

Accordingly, on July 2, 1997, the Department of Commerce issued a Request for Comments (RFC) on DNS administration, on behalf of an

inter-agency working group previously formed to explore the appropriate future role of the U.S. government in the DNS. The RFC solicited public input on issues relating to the overall framework of the DNS system, the creation of new top-level domains, policies for registrars, and trademark issues. During the comment period, over 430 comments were received, amounting to some 1500 pages.1

\1\ The RFC and comments received are available on the Internet at the following address: .

This discussion draft, shaped by the public input described above, provides notice and seeks public comment on a proposal to improve the technical management of Internet names and addresses. It does not propose a monolithic structure for Internet governance. We doubt that the Internet should be governed by one plan or one body or even by a series of plans and bodies. Rather, we seek to create mechanisms to solve a few, primarily technical (albeit critical) questions about administration of Internet names and numbers.

We expect that this proposal will likely spark a lively debate, requiring thoughtful analysis, and appropriate revisions. Nonetheless, we are hopeful that reasonable consensus can be found and that, after appropriate modifications, implementation can begin in April, 1998. Recognizing that no solution will win universal support, the U.S. government seeks as much consensus as possible before acting.

V. Principles for a New System

Our consultations have revealed substantial differences among Internet stakeholders on how the domain name system should evolve. Since the Internet is changing so rapidly, no one entity or individual can claim to know what is best for the Internet. We certainly do not believe that our views are uniquely prescient. Nevertheless, shared principles have emerged from our discussions with Internet stakeholders.

A. Stability

The U.S. government should end its role in the Internet number and name address systems in a responsible manner. This means, above all else, ensuring the stability of the Internet. The Internet functions well today, but its current technical management is probably not viable over the long term. We should not wait for it to break down before acting. Yet, we should not move so quickly, or depart so radically from the existing structures, that we disrupt the functioning of the Internet. The introduction of a new system should not disrupt current operations, or create competing root systems.

B. Competition

The Internet succeeds in great measure because it is a decentralized system that encourages innovation and maximizes individual freedom. Where possible, market mechanisms that support competition and consumer choice should drive the technical management of the Internet because they will promote innovation, preserve diversity, and enhance user choice and satisfaction.

C. Private, Bottom-Up Coordination

Certain technical management functions require coordination. In these cases, responsible, private-sector action is preferable to government control. A private coordinating process is likely to be more flexible than government and to move rapidly enough to meet the changing needs of the Internet and of Internet users. The private process should, as far as possible, reflect the bottom-up governance that has characterized development of the Internet to date.

D. Representation

Technical management of the Internet should reflect the diversity of its users and their needs. Mechanisms should be established to ensure international input in decision making.

In keeping with these principles, we divide the name and number functions into two groups, those that can be moved to a competitive system and those that should be coordinated. We then suggest the creation of a representative, not-for-profit corporation to manage the coordinated functions according to widely accepted objective criteria. We then suggest the steps necessary to move to competitive markets in

those areas that can be market driven. Finally, we suggest a transition plan to ensure that these changes occur in an orderly fashion that preserves the stability of the Internet.

VI. The Proposal

A. The Coordinated Functions

Management of number addresses is best done on a coordinated basis. As technology evolves, changes may be needed in the number allocation system. These changes should also be undertaken in a coordinated fashion.

Similarly, coordination of the root server network is necessary if the whole system is to work smoothly. While day-to-day operational tasks, such as the actual operation and maintenance of the Internet root servers, can be contracted out, overall policy guidance and control of the TLDs and the Internet root server system should be vested in a single organization that is representative of Internet users.

Finally, coordinated maintenance and dissemination of the protocol parameters for Internet addressing will best preserve the stability and interconnectivity of the Internet.

We propose the creation of a private, not-for-profit corporation (the new corporation) to manage the coordinated functions in a stable and open institutional framework. The new corporation should operate as a private

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entity for the benefit of the Internet as a whole. The new corporation would have the following authority:

1. To set policy for and direct the allocation of number blocks to regional number registries for the assignment of Internet addresses;
2. To oversee the operation of an authoritative root server system;
3. To oversee policy for determining, based on objective criteria clearly established in the new organization's charter, the circumstances under which new top-level domains are added to the root system; and
4. To coordinate the development of other technical protocol parameters as needed to maintain universal connectivity on the Internet.

The U.S. government would gradually transfer existing IANA functions, the root system and the appropriate databases to this new not-for-profit corporation. This transition would commence as soon as possible, with operational responsibility moved to the new entity by September 30, 1998. The U.S. government would participate in policy oversight to assure stability until the new corporation is established and stable, phasing out as soon as possible and in no event later than September 30, 2000. The U.S. Department of Commerce will coordinate the U.S. government policy role. In proposing these dates, we are trying to balance concerns about a premature U.S. government exit that turns the domain name system over to a new and untested entity against the concern that the U.S. government will never relinquish its current management role.

The new corporation will be funded by domain name registries and regional IP registries. Initially, current IANA staff will move to this new organization to provide continuity and expertise throughout the period of time it takes to establish the new corporation. The new corporation should hire a chief executive officer with a background in the corporate sector to bring a more rigorous management to the organization than was possible or necessary when the Internet was primarily a research medium. As these functions are now performed in the United States, the new corporation will be headquartered in the United States, and incorporated under U.S. law as a not-for-profit corporation. It will, however, have and report to a board of directors from around the world.

It is probably impossible to establish and maintain a perfectly representative board for this new organization. The Internet community is already extraordinarily diverse and likely to become more so over time. Nonetheless, the organization and its board must derive legitimacy from the participation of key stakeholders. Since the organization will be concerned mainly with numbers, names and protocols, its board should represent membership organizations in each of these areas, as well as the direct interests of Internet users.

The board of directors for the new corporation should be balanced to equitably represent the interests of IP number registries, domain name registries, domain name registrars, the technical community, and Internet users (commercial, not-for-profit, and individuals). Officials of governments or intergovernmental organizations should not serve on

the board of the new corporation. Seats on the initial board might be allocated as follows:

Three directors from a membership association of regional number registries, representing three different regions of the world. Today this would mean one each from ARIN, APNIC and RIPE. As additional regional number registries are added, board members could be designated on a rotating basis or elected by a membership organization made up of regional registries. ARIN, RIPE and APNIC are open membership organizations that represent entities with large blocks of numbers. They have the greatest stake in and knowledge of the number address system. They are also representative internationally.

Two members designated by the Internet Architecture Board (IAB), an international membership board that represents the technical community of the Internet.

Two members designated by a membership association (to be created) representing domain name registries and registrars.

Seven members designated by a membership association (to be created) representing Internet users. At least one of those board seats could be designated for an individual or entity engaged in non-commercial, not-for-profit use of the Internet, and one for individual end users. The remaining seats could be filled by commercial users, including trademark holders.

The CEO of the new corporation would serve on the board of directors.

The new corporation's processes should be fair, open and pro-competitive, protecting against capture by a narrow group of stakeholders. Its decision-making processes should be sound and transparent; the bases for its decisions should be recorded and made publicly available. Super-majority or even consensus requirements may be useful to protect against capture by a self-interested faction. The new corporation's charter should provide a mechanism whereby its governing body will evolve to reflect changes in the constituency of Internet stakeholders. The new corporation should establish an open process for the presentation of petitions to expand board representation.

In performing the functions listed above, the new corporation will act much like a standard-setting body. To the extent that the new corporation operates in an open and pro-competitive manner, its actions will withstand antitrust scrutiny. Its standards should be reasonably based on, and no broader than necessary to promote its legitimate coordinating objectives. Under U.S. law, a standard-setting body can face antitrust liability if it is dominated by an economically interested entity, or if standards are set in secret by a few leading competitors. But appropriate processes and structure will minimize the possibility that the body's actions will be, or will appear to a court to be, anti-competitive.

B. The Competitive Functions

The system for registering second-level domain names and the management of the TLD registries should become competitive and market-driven.

In this connection, we distinguish between registries and registrars. A "registry," as we use the term, is responsible for maintaining a TLD's zone files, which contain the name of each SLD in that TLD and each SLD's corresponding IP number. Under the current structure of the Internet, a given TLD can have no more than one registry. A "registrar" acts as an interface between domain-name holders and the registry, providing registration and value-added services. It submits to the registry zone file information and other data (including contact information) for each of its customers in a single TLD. Currently, NSI acts as both the exclusive registry and as the exclusive registrar for .com, .net, .org, and .edu.

Both registry and registrar functions could be operated on a competitive basis. Just as NSI acts as the registry for .com, .net, and .org, other companies could manage registries with different TLDs such as .vend or .store. Registrars could provide the service of obtaining domain names for customers in any gTLD. Companies that design Web sites for customers might, for example, provide registration as an adjunct to other services. Other companies may perform this function as a stand-alone business.

There appears to be strong consensus that, at least at this time, domain name

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registration--the registrar function--should be competitive. There is disagreement, however, over the wisdom of promoting competition at the registry level.

Some have made a strong case for establishing a market-driven registry system. Competition among registries would allow registrants to choose among TLDs rather than face a single option. Competing TLDs would seek to heighten their efficiency, lower their prices, and provide additional value-added services. Investments in registries could be recouped through branding and marketing. The efficiency, convenience, and service levels associated with the assignment of names could ultimately differ from one TLD registry to another. Without these types of market pressures, they argue, registries will have very little incentive to innovate.

Others feel strongly, however, that if multiple registries are to exist, they should be undertaken on a not-for-profit basis. They argue that lack of portability among registries (that is, the fact that users cannot change registries without adjusting at least part of their domain name string) could create lock-in problems and harm consumers. For example, a registry could induce users to register in a top-level domain by charging very low prices initially and then raise prices dramatically, knowing that name holders will be reluctant to risk established business by moving to a different top-level domain.

We concede that switching costs and lock-in could produce the scenario described above. On the other hand, we believe that market mechanisms may well discourage this type of behavior. On balance, we believe that consumers will benefit from competition among market oriented registries, and we thus support limited experimentation with competing registries during the transition to private sector administration of the domain name system.

C. The Creation of New gTLDs

Internet stakeholders disagree about who should decide when a new top-level domain can be added and how that decision should be made. Some believe that anyone should be allowed to create a top-level domain registry. They argue that the market will decide which will succeed and which will not. Others believe that such a system would be too chaotic and would dramatically increase customer confusion. They argue that it would be far more complex technically, because the root server system would have to point to a large number of top-level domains that were changing with great frequency. They also point out that it would be much more difficult for trademark holders to protect their trademarks if they had to police a large number of top-level domains.

All these arguments have merit, but they all depend on facts that only further experience will reveal. At least in the short run, a prudent concern for the stability of the system requires that expansion of gTLDs proceed at a deliberate and controlled pace to allow for evaluation of the impact of the new gTLDs and well-reasoned evolution of the domain space. The number of new top-level domains should be large enough to create competition among registries and to enable the new corporation to evaluate the functioning, in the new environment, of the root server system and the software systems that enable shared registration. At the same time, it should not be so large as to destabilize the Internet.

We believe that during the transition to private management of the DNS, the addition of up to five new registries would be consistent with these goals. At the outset, we propose that each new registry be limited to a single top-level domain. During this period, the new corporation should evaluate the effects that the addition of new gTLDs have on the operation of the Internet, on users, and on trademark holders. After this transition, the new corporation will be in a better position to decide whether or when the introduction of additional gTLDs is desirable.

Individual companies and consortia alike may seek to operate specific generic top-level domains. Competition will take place on two levels. First, there will be competition among different generic top-level domains. Second, registrars will compete to register clients into these generic top-level domains. By contrast, existing national registries will continue to administer country-code top-level domains if these national government seek to assert those rights. Changes in the registration process for these domains are up to the registries administering them and their respective national governments.

Some have called for the creation of a more descriptive system of top-level domains based on industrial classifications or some other easy to understand schema. They suggest that having multiple top-level domains is already confusing and that the addition of new generic TLDs will make it more difficult for users to find the companies they are seeking.

Market driven systems result in innovation and greater consumer choice and satisfaction in the long run. We expect that in the future, directory services of various sorts will make it easy for users to find the sites they seek regardless of the number of top-level domains.

Attempts to impose too much central order risk stifling a medium like the Internet that is decentralized by nature and thrives on freedom and innovation.

D. The Trademark Dilemma

It is important to keep in mind that trademark/domain name disputes arise very rarely on the Internet today. NSI, for example, has registered millions of domain names, only a tiny fraction of which have been challenged by a trademark owner. But where a trademark is unlawfully used as a domain name, consumers may be misled about the source of the product or service offered on the Internet, and trademark owners may not be able to protect their rights without very expensive litigation.

For cyberspace to function as an effective commercial market, businesses must have confidence that their trademarks can be protected. On the other hand, management of the Internet must respond to the needs of the Internet community as a whole, and not trademark owners exclusively. The balance we strike is to provide trademark holders with the same rights they have in the physical world, to ensure transparency, to guarantee a dispute resolution mechanism with resort to a court system, and to add new top-level domains carefully during the transition to private sector coordination of the domain name system.

There are certain steps that could be taken in the application process that would not be difficult for an applicant, but that would make the trademark owner's job easier. For instance, gTLD registrants could supply basic information--including the applicant's name and sufficient contact information to be able to locate the applicant or its representative. To deter the pirating of domain names, the registry could also require applicants to certify that it knows of no entity with superior rights in the domain name it seeks to register.

The job of policing trademarks could be considerably easier if domain name databases were readily searchable through a common interface to determine what names are registered, who holds those domain names, and how to contact a domain name holder. Many trademark holders find the current registration search tool, who is, too limited in its functioning to be effective for this purpose. A more robust and flexible search tool, which features multiple field or string searching and retrieves similar names, could be

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employed or developed to meet the needs of trademark holders. The databases also could be kept up to date by a requirement that domain name registrants maintain up-to-date contact information.

Mechanisms that allow for on-line dispute resolution could provide an inexpensive and efficient alternative to litigation for resolving disputes between trademark owners and domain name registrants. A swift dispute resolution process could provide for the temporary suspension of a domain name registration if an adversely affected trademark holder objects within a short time, e.g. 30 days, of the initial registration. We seek comment on whether registries should be required to resolve disputes within a specified period of time after an opposition is filed, and if so, how long that period should be.

Trademark holders have expressed concern that domain name registrants in faraway places may be able to infringe their rights with no convenient jurisdiction available in which the trademark owner could file suit to protect those rights. At the time of registration, registrants could agree that, in the event of a trademark dispute involving the name registered, jurisdiction would lie where the registry is domiciled, where the registry database is maintained, or where the ``A'' root server is maintained. We seek comment on this proposal, as well as suggestions for how such jurisdictional provisions could be implemented.

Trademark holders have also called for the creation of some mechanism for ``clearing'' trademarks, especially famous marks, across a range of gTLDs. Such mechanisms could reduce trademark conflict associated with the addition of new gTLDs. Again, we seek comment on this proposal, and suggested mechanisms for trademark clearance processes.

We stop short of proposals that could significantly limit the flexibility of the Internet, such as waiting periods or not allowing any new top-level domains.

We also do not propose to establish a monolithic trademark dispute resolution process at this time, because it is unclear what system would work best. Even trademark holders we have consulted are divided on this question. Therefore, we propose that each name registry must establish minimum dispute resolution and other procedures related to

trademark considerations. Those minimum procedures are spelled out in Appendix 2. Beyond those minimums, registries would be permitted to establish additional trademark protection and trademark dispute resolution mechanisms.

We also propose that shortly after their introduction into the root, a study be undertaken on the effects of adding new gTLDs and related dispute resolution procedures on trademark and intellectual property right holders. This study should be conducted under the auspices of a body that is internationally recognized in the area of dispute resolution procedures, with input from trademark and domain name holders and registries. The findings of this study should be submitted to the board of the new corporation and considered when it makes decisions on the creation and introduction of new gTLDs. Information on the strengths and weaknesses of different dispute resolution procedures should also give the new corporation guidance for deciding whether the established minimum criteria for dispute resolution should be amended or maintained. Such a study could also provide valuable input with respect to trademark harmonization generally.

U.S. trademark law imposes no general duty on a registrar to investigate the propriety of any given registration.² Under existing law, a trademark holder can properly file a lawsuit against a domain name holder that is infringing or diluting the trademark holder's mark. But the law provides no basis for holding that a registrar's mere registration of a domain name, at the behest of an applicant with which it has an arm's-length relationship, should expose it to liability.³ Infringers, rather than registrars, registries, and technical management bodies, should be liable for trademark infringement. Until case law is fully settled, however, registries can expect to incur legal expenses in connection with trademark disputes as a cost of doing business. These costs should not be borne by the new not-for-profit corporation, and therefore registries should be required to indemnify the new corporation for costs incurred in connection with trademark disputes. The evolution of litigation will be one of the factors to be studied by the group tasked to review Internet trademark issues as the new structure evolves.

²\ See generally *MDT Corp. v. New York Stock Exchange*, 858 F. Supp. 1028 (C.D. Calif. 1994).

³\ See *Lockheed Martin Corp. v. Network Solutions, Inc.*, 1997 WL 721899 (C.D. Calif. 11/17/97); *Panavision International v. Toeppen*, 1996 U.S. Dist. LEXIS 20744, 41 U.S.P.Q.2d 1310 (C.D. Calif. 1996).

E. The Intellectual Infrastructure Fund

In 1995, NSF authorized NSI to assess new domain name registrants a \$50 fee per year for the first two years, 30 percent of which was to be deposited in a fund for the preservation and enhancement of the intellectual infrastructure of the Internet (the "Intellectual Infrastructure Fund").

In excess of \$46 Million has been collected to date. In 1997, Congress authorized the crediting of \$23 Million of the funds collected to the Research and Related Activities Appropriation of the National Science Foundation to support the development of the Next Generation Internet. The establishment of the Intellectual Infrastructure Fund currently is the subject of litigation in the U.S. District Court for the District of Columbia.

As the U.S. government is seeking to end its role in the domain name system, we believe the provision in the cooperative agreement regarding allocation of a portion of the registration fee to the Internet Intellectual Infrastructure Fund should terminate on April 1, 1998, the beginning of the ramp-down period of the cooperative agreement.

VII. The Transition

A number of steps must be taken to create the system envisioned in this paper.

1. The new not-for-profit organization must be established and its board chosen.
2. The membership associations representing (1) registries and registrars, and (2) Internet users, must be formed.
3. An agreement must be reached between the U.S. government and the current IANA on the transfer of IANA functions to the new organization.
4. NSI and the U.S. government must reach agreement on the terms and conditions of NSI's evolution into one competitor among many in the

registrar and registry marketplaces. A level playing field for competition must be established.

5. The new corporation must establish processes for determining whether an organization meets the transition period criteria for prospective registries and registrars.

6. A process must be laid out for making the management of the root server system more robust and secure, and, for transitioning that management from U.S. government auspices to those of the new corporation.

A. The NSI Agreement

The U.S. government will ramp down the NSI cooperative agreement and phase it out by the end of September 1998. The ramp down agreement with NSI should reflect the following terms and conditions designed to promote competition in the domain name space.

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1. NSI will effectively separate and maintain a clear division between its current registry business and its current registrar business. NSI will continue to operate .com, .net and .org but on a fully shared-registry basis; it will shift operation of .edu to a not-for-profit entity. The registry will treat all registrars on a nondiscriminatory basis and will price registry services according to an agreed upon formula for a period of time.

2. As part of the transition to a fully shared-registry system, NSI will develop (or license) and implement the technical capability to share the registration of its top-level domains with any registrar so that any registrar can register domain names there in as soon as possible, by a date certain to be agreed upon.

3. NSI will give the U.S. government a copy and documentation of all the data, software, and appropriate licenses to other intellectual property generated under the cooperative agreement, for use by the new corporation for the benefit of the Internet.

4. NSI will turn over control of the ``A'' root server and the management of the root server system when instructed to do so by the U.S. government.

5. NSI will agree to meet the requirements for registries and registrars set out in Appendix 1.

B. Competitive Registries, Registrars, and the Addition of New gTLDs

Over the past few years, several groups have expressed a desire to enter the registry or registrar business. Ideally, the U.S. government would stay its hand, deferring the creation of a specific plan to introduce competition into the domain name system until such time as the new corporation has been organized and given an opportunity to study the questions that such proposals raise. Should the transition plan outlined below, or some other proposal, fail to achieve substantial consensus, that course may well need to be taken.

Realistically, however, the new corporation cannot be established overnight. Before operating procedures can be established, a board of directors and a CEO must be selected. Under a best case scenario, it is unlikely that the new corporation can be fully operational before September 30, 1998. It is our view, based on widespread public input, that competition should be introduced into the DNS system more quickly.

We therefore set out below a proposal to introduce competition into the domain name system during the transition from the existing U.S. government authority to a fully functioning coordinating body. This proposal is designed only for the transition period. Once the new corporation is formed, it will assume authority over the terms and conditions for the admission of new top-level domains.

Registries and New gTLDs

This proposal calls for the creation of up to five new registries, each of which would be initially permitted to operate one new gTLD. As discussed above, that number is large enough to provide valuable information about the effects of adding new gTLDs and introducing competition at the registry level, but not so large as to threaten the stability of the Internet during this transition period. In order to designate the new registries and gTLDs, IANA must establish equitable, objective criteria and processes for selecting among a large number of individuals and entities that want to provide registry services. Unsuccessful applicants will be disappointed.

We have examined a number of options for recognizing the development work already underway in the private sector. For example, some argue for the provision of a ``pioneer preference'' or other grand fathering mechanism to limit the pool of would-be registrants to those who, in response to previous IANA requests, have already invested in

developing registry businesses. While this has significant appeal and we do not rule it out, it is not an easy matter to determine who should be in that pool. IANA would be exposed to considerable liability for such determinations, and required to defend against charges that it acted in an arbitrary or inequitable manner. We welcome suggestions as to whether the pool of applicants should be limited, and if so, on what basis.

We propose, that during the transition, the first five entities (whether from a limited or unlimited pool) to meet the technical, managerial, and site requirements described in Appendix 1 will be allowed to establish a domain name registry. The IANA will engage neutral accounting and technical consultancy firms to evaluate a proposed registry under these criteria and certify an applicant as qualified. These registries may either select, in order of their qualification, from a list of available gTLDs or propose another gTLD to IANA. (We welcome suggestions on the gTLDs that should be immediately available and would propose a list based on that input, as well as any market data currently available that indicates consumer interest in particular gTLDs.)

The registry will be permitted to provide and charge for value-added services, over and above the basic services provided to registrars. At least at this time, the registry must, however, operate on a shared registry basis, treating all registrars on a nondiscriminatory basis, with respect to pricing, access and rules. Each TLD's registry should be equally accessible to any qualified registrar, so that registrants may choose their registrars competitively on the basis of price and service. The registry will also have to agree to modify its technical capabilities based on protocol changes that occur in Internet technology so that interoperability can be preserved. At some point in the future, the new organization may consider the desirability of allowing the introduction of non-shared registries.

Registrars

Any entity will be permitted to provide registrar services as long as it meets the basic technical, managerial, and site requirements as described in Appendix 1 of this paper. Registrars will be allowed to register clients into any top-level domain for which the client satisfies the eligibility rules, if any.

C. The Root Server System

IANA and the U.S. government, in cooperation with NSI, the IAB, and other relevant organizations will undertake a review of the root server system to recommend means to increase the security and professional management of the system. The recommendations of the study should be implemented as part of the transition process to the new corporation.

D. The .us Domain

At present, the IANA administers .us as a locality based hierarchy in which second-level domain space is allocated to states and US territories.⁴ This name space is further subdivided into localities. General registration under localities is performed on an exclusive basis by private firms that have requested delegation from IANA. The .us name space has typically been used by branches of state and local governments, although some commercial names have been assigned. Where registration for a locality has not been delegated, the IANA itself serves as the registrar.

\4\ Management principles for the .us domain space are set forth in Internet RFC 1480, (<http://www.isi.edu/in-notes/rfc1480.txt>)

Some in the Internet community have suggested that the pressure for unique identifiers in the .com gTLD could be relieved if commercial use of the .us space was encouraged. Commercial

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users and trademark holders, however, find the current locality-based system too cumbersome and complicated for commercial use. Expanded use of the .us TLD could alleviate some of the pressure for new generic TLDs and reduce conflicts between American companies and others vying for the same domain name.

Clearly, there is much opportunity for enhancing the .us domain space, and the .us domain could be expanded in many ways without displacing the current geopolitical structure. Over the next few months, the U.S. government will work with the private sector and state

and local governments to determine how best to make the .us domain more attractive to commercial users. It may also be appropriate to move the gTLDs traditionally reserved for U.S. government use (i.e. .gov and .mil), into a reformulated .us ccTLD.

The U.S. government will further explore and seek public input on these issues through a separate Request for Comment on the evolution of the .us name space. However, we welcome any preliminary comments at this time.

E. The Process

The U.S. government recognizes that its unique role in the Internet domain name system should end as soon as is practical. We also recognize an obligation to end this involvement in a responsible manner that preserves the stability of the Internet. We cannot cede authority to any particular commercial interest or any specific coalition of interest groups. We also have a responsibility to oppose any efforts to fragment the Internet, as this would destroy one of the key factors-- interoperability--that has made the Internet so successful.

Our goal is to seek as strong a consensus as possible so that a new, open, and accountable system can emerge that is legitimate in the eyes of all Internet stakeholders. It is in this spirit that we present this paper for discussion.

VIII. Other Information

Executive Order 12866

This proposal has been determined not to be significant under section 3(f) of Executive Order 12866.

Executive Order 12612

This rule does not contain policies with Federalism implications sufficient to warrant preparation of a Federalism assessment under Executive Order 12612.

Regulatory Flexibility Act

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy, the Small Business Administration that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities as follows:

We believe that the overall effect of the proposal will be highly beneficial. No negative effects are envisioned at this time. In fact, businesses will enjoy a reduction in the cost of registering domain names as a result of this proposal. In 1995, the National Science Foundation authorized a registration fee of \$50 per year for the first two years, 30 percent of which was to be deposited in a fund for the preservation and enhancement of the intellectual infrastructure of the Internet (the "Intellectual Infrastructure Fund"). The proposal seeks to terminate the agreement to earmark a portion of the registration fee to the Intellectual Infrastructure Fund. We also believe that a competitive registration system will lead to reduced fees in registering domain names.

The proposal is pro-competitive because it transfers the current system of domain name registration to a market-driven registry system. Moreover, as the Internet becomes more important to commerce, particularly small businesses, it is crucial that a more formal and robust management structure be implemented. As the commercial value of Internet names increases, decisions regarding the addition of new top-level domains should be formal, certain, and accountable to the Internet community. For example, presently, mechanisms for resolving disputes between trademark holders and domain name holders are expensive and cumbersome. The proposal requires each name registry to establish an inexpensive and efficient dispute resolution system as well as other procedures related to trademark consideration.

The U.S. government would gradually transfer existing Internet Assigned Numbers Authority (IANA) functions, the root system and the appropriate databases to a new not-for-profit corporation by September 30, 1998. The U.S. government would, however, participate in policy oversight to assure stability until the new corporation is established and stable, phasing out completely no later than September 30, 2000. Accordingly, the transition period would afford the U.S. government an opportunity to determine if the structure of the new corporation negatively impacts small entities. Moreover, the corporation would be headquartered in the U.S. and incorporated under U.S. law. Accordingly, the corporation would be subject to antitrust scrutiny if dominated by

economically interested entities, or if its standards are established by a few leading competitors.

As a result, no initial regulatory flexibility analysis has been prepared.

Paperwork Reduction Act

This rule does not contain information collection requirements subject to the provisions of the Paperwork Reduction Act.

Kathy Smith,
Acting Deputy Assistant Secretary for Communications and Information.

Appendix 1--Recommended Registry and Registrar Requirements

In order to ensure the stability of the Internet's domain name system, protect consumers, and preserve the intellectual property rights of trademark owners, all registries of generic top-level domain names must meet the set of technical, managerial, and site requirements outlined below. Only prospective registries that meet these criteria will be allowed by IANA to register their gTLD in the ``A'' server. If, after it begins operations, a registry no longer meets these requirements, IANA may transfer management of the domain names under that registry's gTLD to another organization.

Independent testing, reviewing, and inspection called for in the requirements for registries should be done by appropriate certifying organizations or testing laboratories rather than IANA itself, although IANA will define the requirements and the procedures for tests and audits.

These requirements apply only to generic TLDs. They will apply to both existing gTLDs (e.g., .com, .edu., .net, .org) and new gTLDs. Although they are not required to, we expect many ccTLD registries and registrars may wish to assure their customers that they meet these requirements or similar ones.

Registries will be separate from registrars and have only registrars as their customers. If a registry wishes to act both as registry and registrar for the same TLD, it must do so through separate subsidiaries. Appropriate accounting and confidentiality safeguards shall be used to ensure that the registry subsidiary's business is not utilized in any manner to benefit the registrar subsidiary to the detriment of any other registrar.

Each top-level domain (TLD) database will be maintained by only one registry and, at least initially, each new registry can host only one TLD.

Registry Requirements

1. An independently-tested, functioning Database and Communications System that:

a. Allows multiple competing registrars to have secure access (with encryption and authentication) to the database on an equal (first-come, first-served) basis.

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b. Is both robust (24 hours per day, 365 days per year) and scalable (i.e., capable of handling high volumes of entries and inquiries).

c. Has multiple high-throughput (i.e., at least T1) connections to the Internet via at least two separate Internet Service Providers.

d. Includes a daily data backup and archiving system.

e. Incorporates a record management system that maintains copies of all transactions, correspondence, and communications with registrars for at least the length of a registration contract.

f. Features a searchable, on-line database meeting the requirements of Appendix 2.

g. Provides free access to the software and customer interface that a registrar would need to register new second-level domain names.

h. An adequate number (perhaps two or three) of globally-positioned zone-file servers connected to the Internet for each TLD.

2. Independently-reviewed Management Policies, Procedures, and Personnel including:

a. Alternate (i.e., non-litigation) dispute resolution providing a timely and inexpensive forum for trademark-related complaints. (These procedures should be consistent with applicable national laws and compatible with any available judicial or administrative remedies.)

b. A plan to ensure that the registry's obligations to its

customers will be fulfilled in the event that the registry goes out of business. This plan must indicate how the registry would ensure that domain name holders will continue to have use of their domain name and that operation of the Internet will not be adversely affected.

c. Procedures for assuring and maintaining the expertise and experience of technical staff.

d. Commonly-accepted procedures for information systems security to prevent malicious hackers and others from disrupting operations of the registry.

3. Independently inspected Physical Sites that feature:

a. A backup power system including a multi-day power source.

b. A high level of security due to twenty-four-hour guards and appropriate physical safeguards against intruders.

c. A remotely-located, fully redundant and staffed twin facility with "hot switchover" capability in the event of a main facility failure caused by either a natural disaster (e.g., earthquake or tornado) or an accidental (fire, burst pipe) or deliberate (arson, bomb) man-made event. (This might be provided at, or jointly supported with, another registry, which would encourage compatibility of hardware and commonality of interfaces.)

Registrar Requirements

Registries will set standards for registrars with which they wish to do business. The following are the minimal qualifications that IANA should mandate that each registry impose and test or inspect before allowing a registrar to access its database(s). Any additional requirements imposed by registries on registrars must be approved by IANA and should not affect the stability of the Internet or substantially reduce competition in the registrar business. Registries may refuse to accept registrations from registrars that fail to meet these requirements and may remove domain names from the registries if at a later time the registrar which registered them no longer meets the requirements for registrars.

1. A functioning Database and Communications System that supports:

a. Secure access (with encryption and authentication) to the registry.

b. Robust and scalable operations capable of handling moderate volumes.

c. Multiple connections to the Internet via at least two Internet Service Providers.

d. A daily data backup and archival system.

e. A record management system that maintains copies of all transactions, correspondence, and communications with all registries for at least the length of a registration contract.

2. Management Policies, Procedures, and Personnel including:

a. A plan to ensure that the registrar's obligations to its customers and to the registries will be fulfilled in the event that the registrar goes out of business. This plan must indicate how the registrar would ensure that domain name holders will continue to have use of their domain name and that operation of the Internet will not be adversely affected.

b. Commonly-accepted procedures for information systems security to prevent malicious hackers and others from disrupting operations.

3. Independently inspected Physical Sites that features:

a. A backup power system.

b. A high level of security due to twenty-four-hour guards and appropriate physical safeguards against intruders.

c. Remotely-stored backup files to permit recreation of customer records.

Appendix 2--Minimum Dispute Resolution and Other Procedures Related to Trademarks

1. Minimum Application Requirements.

a. Sufficient owner and contact information (e.g., names, mail address for service of process, e-mail address, telephone and fax numbers, etc.) to enable an interested party to contact either the owner/applicant or its designated representative; and a

b. Certification statement by the applicant that:

--It is entitled to register the domain name for which it is applying and knows of no entity with superior rights in the domain name; and

--It intends to use the domain name.

2. Searchable Database Requirements.

a. Utilizing a simple, easy-to-use, standardized search interface that features multiple field or string searching and the retrieval of similar names, the following information must be included in all registry databases, and available to anyone with access to the Internet:

- Up-to-date ownership and contact information;
- Up-to-date and historical chain of title information for the domain name;
- A mail address for service of process;
- The date of the domain name registration; and
- The date an objection to registration of the domain name was filed.

3. Updated Ownership, Contact and Use Information.

a. At any time there is a change in ownership, the domain name owner must submit the following information:

- Up-to-date contact and ownership information; and
- A description of how the owner is using the domain name, or, if the domain name is not in use, a statement to that effect.

4. Alternative Dispute Resolution of Domain Name Conflicts.

a. There must be a readily available and convenient dispute resolution process that requires no involvement by registrars.

b. Registries/Registrars will abide by the decisions resulting from an agreed upon dispute resolution process or by the decision of a court of competent jurisdiction.

If an objection to registration is raised within 30 days after registration of the domain name, a brief period of suspension during the pendency of the dispute will be provided by the registries.

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Statement of Policy on the Management of Internet Names and Addresses

Topics:

- [Domain Name System](#) [1]

Date:

June 05, 1998

Docket Number:

980212036-8146-02

UNITED STATES DEPARTMENT OF COMMERCE

Management of Internet Names and Addresses

Docket Number: 980212036-8146-02

AGENCY: National Telecommunications and Information Administration

ACTION: Statement of Policy

SUMMARY: On July 1, 1997, as part of the Clinton Administration's *Framework for Global Electronic Commerce*,⁽¹⁾ the President directed the Secretary of Commerce to privatize the domain name system (DNS) in a manner that increases competition and facilitates international participation in its management.

Accordingly, on July 2, 1997, the Department of Commerce issued a Request for Comments (RFC) on DNS administration. The RFC solicited public input on issues relating to the overall framework of the DNS administration, the creation of new top-level domains, policies for domain name registrars, and trademark issues. During the comment period, more than 430 comments were received, amounting to some 1500 pages.⁽²⁾

On January 30, 1998, the National Telecommunications and Information Administration (NTIA), an agency of the Department of Commerce, issued for comment, *A Proposal to Improve the Technical Management of Internet Names and Addresses*. The proposed rulemaking, or "Green Paper," was published in the Federal Register on February 20, 1998,

providing opportunity for public comment. NTIA received more than 650 comments, as of March 23, 1998, when the comment period closed.⁽³⁾

The Green Paper proposed certain actions designed to privatize the management of Internet names and addresses in a manner that allows for the development of robust competition and facilitates global participation in Internet management. The Green Paper proposed for discussion a variety of issues relating to DNS management including private sector creation of a new not-for-profit corporation (the "new corporation") managed by a globally and functionally representative Board of Directors.

EFFECTIVE DATE: This general statement of policy is not subject to the delay in effective date required of substantive rules under 5 U.S.C. § 553(d). It does not contain mandatory provisions and does not itself have the force and effect of law.⁽⁴⁾ Therefore, the effective date of this policy statement is [insert date of publication in the Federal Register].

FOR FURTHER INFORMATION CONTACT: Karen Rose, Office of International Affairs (OIA), Rm 4701, National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce, 14th and Constitution Ave., NW, Washington, D.C., 20230. Telephone: (202) 482-0365. E-mail: dnspolicy@ntia.doc.gov [2]

AUTHORITY: 15 U.S.C. § 1512; 15 U.S.C. § 1525; 47 U.S.C. § 902(b)(2)(H); 47 U.S.C. § 902(b)(2)(I); 47 U.S.C. § 902(b)(2)(M); 47 U.S.C. § 904(c)(1).

SUPPLEMENTARY INFORMATION:

Background:

Domain names are the familiar and easy-to-remember names for Internet computers (e.g., "www.ecommerce.gov"). They map to unique Internet Protocol (IP) numbers (e.g., 98.37.241.30) that serve as routing addresses on the Internet. The domain name system (DNS) translates Internet names into the IP numbers needed for transmission of information across the network.

U.S. Role in DNS Development:

More than 25 years ago, the U.S. Government began funding research necessary to develop packet-switching technology and communications networks, starting with the "ARPANET" network established by the Department of Defense's Advanced Research Projects Agency (DARPA) in the 1960s. ARPANET was later linked to other networks established by other government agencies, universities and research facilities. During the 1970s, DARPA also funded the development of a "network of networks;" this became known as the Internet, and the protocols that allowed the networks to intercommunicate became known as Internet protocols (IP).

As part of the ARPANET development work contracted to the University of California at Los Angeles (UCLA), Dr. Jon Postel, then a graduate student at the university, undertook the maintenance of a list of host names and addresses and also a list of documents prepared by ARPANET researchers, called Requests for Comments (RFCs). The lists and the RFCs were made available to the network community through the auspices of SRI International, under contract to DARPA and later the Defense Communication Agency (DCA) (now the Defense Information Systems Agency (DISA)) for performing the functions of the Network Information Center (the NIC).

After Dr. Postel moved from UCLA to the Information Sciences Institute (ISI) at the University of Southern California (USC), he continued to maintain the list of assigned Internet numbers and names under contracts with DARPA. SRI International continued to publish the lists. As the lists grew, DARPA permitted Dr. Postel to delegate additional administrative aspects of the list maintenance to SRI, under continuing technical oversight. Dr. Postel, under the DARPA contracts, also published a list of technical parameters that had been assigned for use by protocol developers. Eventually these functions collectively became known as the Internet Assigned Numbers Authority (IANA).

Until the early 1980s, the Internet was managed by DARPA, and used primarily for research purposes. Nonetheless, the task of maintaining the name list became onerous, and the Domain Name System (DNS) was developed to improve the process. Dr. Postel and SRI participated in DARPA's development and establishment of the technology and practices used by the DNS. By 1990, ARPANET was completely phased out.

The National Science Foundation (NSF) has statutory authority for supporting and strengthening basic scientific research, engineering, and educational activities in the United States, including the maintenance of computer networks to connect research and educational institutions. Beginning in 1987, IBM, MCI and Merit developed NSFNET, a national high-speed network based on Internet protocols, under an award from NSF. NSFNET, the largest of the governmental networks, provided a "backbone" to connect other networks serving more than 4,000 research and educational institutions throughout the country. The National Aeronautics and Space Administration (NASA) and the U.S. Department of Energy also contributed backbone facilities.

In 1991-92, NSF assumed responsibility for coordinating and funding the management of the non-military portion of the Internet infrastructure. NSF solicited competitive proposals to provide a variety of infrastructure services, including domain name registration services. On December 31, 1992, NSF entered into a cooperative agreement with Network Solutions, Inc. (NSI) for some of these services, including the domain name registration services. Since that time, NSI has managed key registration, coordination, and maintenance functions of the Internet domain name system. NSI registers domain names in the generic top level domains (gTLDs) on a first come, first served basis and also maintains a directory linking domain names with the IP numbers of domain name servers. NSI also currently maintains the authoritative database of Internet registrations.

In 1992, the U.S. Congress gave NSF statutory authority to allow commercial activity on the NSFNET.⁽⁵⁾ This facilitated connections between NSFNET and newly forming commercial network service providers, paving the way for today's Internet. Thus, the U.S. Government has

played a pivotal role in creating the Internet as we know it today. The U.S. Government consistently encouraged bottom-up development of networking technologies, and throughout the course of its development, computer scientists from around the world have enriched the Internet and facilitated exploitation of its true potential. For example, scientists at CERN, in Switzerland, developed software, protocols and conventions that formed the basis of today's vibrant World Wide Web. This type of pioneering Internet research and development continues in cooperative organizations and consortia throughout the world.

DNS Management Today:

In recent years, commercial use of the Internet has expanded rapidly. As a legacy, however, major components of the domain name system are still performed by, or subject to, agreements with agencies of the U.S. Government.

Every Internet computer has a unique IP number. IANA, headed by Dr. Jon Postel, coordinates this system by allocating blocks of numerical addresses to regional IP registries (ARIN in North America, RIPE in Europe, and APNIC in the Asia/Pacific region), under contract with DARPA. In turn, larger Internet service providers apply to the regional IP registries for blocks of IP addresses. The recipients of those address blocks then reassign addresses to smaller Internet service providers and to end users.

- 1) Assignment of numerical addresses to Internet users.

The domain name space is constructed as a hierarchy. It is divided into top-level domains (TLDs), with each TLD then divided into second-level domains (SLDs), and so on. More than 200 national, or country-code, TLDs (ccTLDs) are administered by their corresponding governments or by private entities with the appropriate national government's acquiescence. A small set of gTLDs do not carry any national identifier, but denote the intended function of that portion of the domain space. For example, .com was established for commercial users, .org for not-for-profit organizations, and .net for network service providers. The registration and propagation of these key gTLDs are performed by NSI, under a five-year cooperative agreement with NSF. This agreement expires on September 30, 1998.

- 2) Management of the system of registering names for Internet users.

The root server system is a set of thirteen file servers, which together contain authoritative databases listing all TLDs. Currently, NSI operates the "A" root server, which maintains the authoritative root database and replicates changes to the other root servers on a daily basis. Different organizations, including NSI, operate the other 12 root servers.⁽⁶⁾ The U.S. Government plays a role in the operation of about half of the Internet's root servers. Universal name consistency on the Internet cannot be guaranteed without a set of authoritative and consistent roots. Without such consistency messages could not be routed with any certainty to

the intended addresses.

- 3) Operation of the root server system.

The Internet protocol suite, as defined by the Internet Engineering Task Force (IETF), contains many technical parameters, including protocol numbers, port numbers, autonomous system numbers, management information base object identifiers and others. The common use of these protocols by the Internet community requires that the particular values used in these fields be assigned uniquely. Currently, IANA, under contract with DARPA, makes these assignments and maintains a registry of the assigned values.

- 4) Protocol Assignment.

The Need for Change:

From its origins as a U.S.-based research vehicle, the Internet is rapidly becoming an international medium for commerce, education and communication. The traditional means of organizing its technical functions need to evolve as well. The pressures for change are coming from many different quarters:

_ There is widespread dissatisfaction about the absence of competition in domain name registration.

_ Conflicts between trademark holders and domain name holders are becoming more common. Mechanisms for resolving these conflicts are expensive and cumbersome.

_ Many commercial interests, staking their future on the successful growth of the Internet, are calling for a more formal and robust management structure.

_ An increasing percentage of Internet users reside outside of the U.S., and those stakeholders want to participate in Internet coordination.

_ As Internet names increasingly have commercial value, the decision to add new top-level domains cannot be made on an *ad hoc* basis by entities or individuals that are not formally accountable to the Internet community.

_ As the Internet becomes commercial, it becomes less appropriate for U.S. research agencies to direct and fund these functions.

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The Internet technical community has been actively debating DNS management policy for several years. Experimental registry systems offering name registration services in an

alternative set of exclusive domains developed as early as January 1996. Although visible to only a fraction of Internet users, alternative systems such as the name.space, AlterNIC, and eDNS affiliated registries⁽⁷⁾ contributed to the community's dialogue on the evolution of DNS administration.

In May of 1996, Dr. Postel proposed the creation of multiple, exclusive, competing top-level domain name registries. This proposal called for the introduction of up to 50 new competing domain name registries, each with the exclusive right to register names in up to three new top-level domains, for a total of 150 new TLDs. While some supported the proposal, the plan drew much criticism from the Internet technical community.⁽⁸⁾ The paper was revised and reissued.⁽⁹⁾ The Internet Society's (ISOC) board of trustees endorsed, in principle, the slightly revised but substantively similar version of the draft in June of 1996.

After considerable debate and redrafting failed to produce a consensus on DNS change, IANA and the Internet Society (ISOC) organized the International Ad Hoc Committee⁽¹⁰⁾ (IAHC or the Ad Hoc Committee) in September 1996, to resolve DNS management issues. The World Intellectual Property Organization (WIPO) and the International Telecommunications Union (ITU) participated in the IAHC. The Federal Networking Council (FNC) participated in the early deliberations of the Ad Hoc Committee.

The IAHC issued a draft plan in December 1996 that introduced unique and thoughtful concepts for the evolution of DNS administration.⁽¹¹⁾ The final report proposed a memorandum of understanding (MoU) that would have established, initially, seven new gTLDs to be operated on a nonexclusive basis by a consortium of new private domain name registrars called the Council of Registrars (CORE).⁽¹²⁾ Policy oversight would have been undertaken in a separate council called the Policy Oversight Committee (POC) with seats allocated to specified stakeholder groups. Further, the plan formally introduced mechanisms for resolving trademark/domain name disputes. Under the MoU, registrants for second-level domains would have been required to submit to mediation and arbitration, facilitated by WIPO, in the event of conflict with trademark holders.

Although the IAHC proposal gained support in many quarters of the Internet community, the IAHC process was criticized for its aggressive technology development and implementation schedule, for being dominated by the Internet engineering community, and for lacking participation by and input from business interests and others in the Internet community.⁽¹³⁾ Others criticized the plan for failing to solve the competitive problems that were such a source of dissatisfaction among Internet users and for imposing unnecessary burdens on trademark holders. Although the POC responded by revising the original plan, demonstrating a commendable degree of flexibility, the proposal was not able to overcome initial criticism of both the plan and the process by which the plan was developed.⁽¹⁴⁾ Important segments of the Internet community remained outside the IAHC process, criticizing it as insufficiently representative.⁽¹⁵⁾

As a result of the pressure to change DNS management, and in order to facilitate its withdrawal from DNS management, the U.S. Government, through the Department of Commerce and NTIA, sought public comment on the direction of U.S. policy with respect to DNS, issuing the Green Paper on January 30, 1998.⁽¹⁶⁾ The approach outlined in the Green

Paper adopted elements of other proposals, such as the early Postel drafts and the IAHC gTLD- MoU.

Comments and Response: The following are summaries of and responses to the major comments that were received in response to NTIA's issuance of *A Proposal to Improve the Technical Management of Internet Names and Addresses*. As used herein, quantitative terms such as "some," "many," and "the majority of," reflect, roughly speaking, the proportion of comments addressing a particular issue but are not intended to summarize all comments received or the complete substance of all such comments.

1. Principles for a New System. The Green Paper set out four principles to guide the evolution of the domain name system: stability, competition, private bottom-up coordination, and representation.

Comments: In general, commenters supported these principles, in some cases highlighting the importance of one or more of the principles. For example, a number of commenters emphasized the importance of establishing a body that fully reflects the broad diversity of the Internet community. Others stressed the need to preserve the bottom-up tradition of Internet governance. A limited number of commenters proposed additional principles for the new system, including principles related to the protection of human rights, free speech, open communication, and the preservation of the Internet as a public trust. Finally, some commenters who agreed that Internet stability is an important principle, nonetheless objected to the U.S. Government's assertion of any participatory role in ensuring such stability.

Response: The U.S. Government policy applies only to management of Internet names and addresses and does not set out a system of Internet "governance." Existing human rights and free speech protections will not be disturbed and, therefore, need not be specifically included in the core principles for DNS management. In addition, this policy is not intended to displace other legal regimes (international law, competition law, tax law and principles of international taxation, intellectual property law, etc.) that may already apply. The continued applicability of these systems as well as the principle of representation should ensure that DNS management proceeds in the interest of the Internet community as a whole. Finally, the U.S. Government believes that it would be irresponsible to withdraw from its existing management role without taking steps to ensure the stability of the Internet during its transition to private sector management. On balance, the comments did not present any consensus for amending the principles outlined in the Green Paper.

2. The Coordinated Functions. The Green Paper identified four DNS functions to be performed on a coordinated, centralized basis in order to ensure that the Internet runs smoothly:

2. To oversee the operation of the Internet root server system;
3. To oversee policy for determining the circumstances under which new top level domains would be added to the root system; and

4. To coordinate the development of other technical protocol parameters as needed to maintain universal connectivity on the Internet.

- 1. To set policy for and direct the allocation of IP number blocks;

Comments: Most commenters agreed that these functions should be coordinated centrally, although a few argued that a system of authoritative roots is not technically necessary to ensure DNS stability. A number of commenters, however, noted that the fourth function, as delineated in the Green Paper, overstated the functions currently performed by IANA, attributing to it central management over an expanded set of functions, some of which are now carried out by the IETF.

Response: In order to preserve universal connectivity and the smooth operation of the Internet, the U.S. Government continues to believe, along with most commenters, that these four functions should be coordinated. In the absence of an authoritative root system, the potential for name collisions among competing sources for the same domain name could undermine the smooth functioning and stability of the Internet.

The Green Paper was not, however, intended to expand the responsibilities associated with Internet protocols beyond those currently performed by IANA. Specifically, management of DNS by the new corporation does not encompass the development of Internet technical parameters for other purposes by other organizations such as IETF. The fourth function should be restated accordingly:

- · to coordinate the assignment of other Internet technical parameters as needed to maintain universal connectivity on the Internet.

3. Separation of Name and Number Authority.

Comments: A number of commenters suggested that management of the domain name system should be separated from management of the IP number system. These commenters expressed the view that the numbering system is relatively technical and straightforward. They feared that tight linkage of domain name and IP number policy development would embroil the IP numbering system in the kind of controversy that has surrounded domain name issuance in recent months. These commenters also expressed concern that the development of alternative name and number systems could be inhibited by this controversy or delayed by those with vested interests in the existing system.

Response: The concerns expressed by the commenters are legitimate, but domain names and IP numbers must ultimately be coordinated to preserve universal connectivity on the Internet. Also, there are significant costs associated with establishing and operating two separate management entities.

However, there are organizational structures that could minimize the risks identified by commenters. For example, separate name and number councils could be formed within a single organization. Policy could be determined within the appropriate council that would submit its recommendations to the new corporation's Board of Directors for ratification.

4. Creation of the New Corporation and Management of the DNS. The Green Paper called for the creation of a new private, not-for-profit corporation(17) responsible for coordinating specific DNS functions for the benefit of the Internet as a whole. Under the Green Paper proposal, the U.S. Government(18) would gradually transfer these functions to the new corporation beginning as soon as possible, with the goal of having the new corporation carry out operational responsibility by October 1998. Under the Green Paper proposal, the U.S. Government would continue to participate in policy oversight until such time as the new corporation was established and stable, phasing out as soon as possible, but in no event later than September 30, 2000. The Green Paper suggested that the new corporation be incorporated in the United States in order to promote stability and facilitate the continued reliance on technical expertise residing in the United States, including IANA staff at USC/ISI.

Comments: Almost all commenters supported the creation of a new, private not-for-profit corporation to manage DNS. Many suggested that IANA should evolve into the new corporation. A small number of commenters asserted that the U.S. Government should continue to manage Internet names and addresses. Another small number of commenters suggested that DNS should be managed by international governmental institutions such as the United Nations or the International Telecommunications Union. Many commenters urged the U.S. Government to commit to a more aggressive timeline for the new corporation's assumption of management responsibility. Some commenters also suggested that the proposal to headquarter the new corporation in the United States represented an inappropriate attempt to impose U.S. law on the Internet as a whole.

Response: The U.S. Government is committed to a transition that will allow the private sector to take leadership for DNS management. Most commenters shared this goal. While international organizations may provide specific expertise or act as advisors to the new corporation, the U.S. continues to believe, as do most commenters, that neither national governments acting as sovereigns nor intergovernmental organizations acting as representatives of governments should participate in management of Internet names and addresses. Of course, national governments now have, and will continue to have, authority to manage or establish policy for their own ccTLDs.

The U.S. Government would prefer that this transition be complete before the year 2000. To the extent that the new corporation is established and operationally stable, September 30, 2000 is intended to be, and remains, an "outside" date.

IANA has functioned as a government contractor, albeit with considerable latitude, for some time now. Moreover, IANA is not formally organized or constituted. It describes a function more than an entity, and as such does not currently provide a legal foundation for the new corporation. This is not to say, however, that IANA could not be reconstituted by a broad-based, representative group of Internet stakeholders or that individuals associated with IANA should not themselves play important foundation roles in the formation of the new corporation. We believe, and many commenters also suggested, that the private sector

organizers will want Dr. Postel and other IANA staff to be involved in the creation of the new corporation.

Because of the significant U.S.-based DNS expertise and in order to preserve stability, it makes sense to headquarter the new corporation in the United States. Further, the mere fact that the new corporation would be incorporated in the United States would not remove it from the jurisdiction of other nations. Finally, we note that the new corporation must be headquartered somewhere, and similar objections would inevitably arise if it were incorporated in another location.

5. Structure of the New Corporation. The Green Paper proposed a 15-member Board, consisting of three representatives of regional number registries, two members designated by the Internet Architecture Board (IAB), two members representing domain name registries and domain name registrars, seven members representing Internet users, and the Chief Executive Officer of the new corporation.

Comments: Commenters expressed a variety of positions on the composition of the Board of Directors for the new corporation. In general, however, most commenters supported the establishment of a Board of Directors that would be representative of the functional and geographic diversity of the Internet. For the most part, commenters agreed that the groups listed in the Green Paper included individuals and entities likely to be materially affected by changes in DNS. Most of those who criticized the proposed allocation of Board seats called for increased representation of their particular interest group on the Board of Directors. Specifically, a number of commenters suggested that the allocation set forth in the Green Paper did not adequately reflect the special interests of (1) trademark holders, (2) Internet service providers, or (3) the not-for-profit community. Others commented that the Green Paper did not adequately ensure that the Board would be globally representative.

Response: The Green Paper attempted to describe a manageably sized Board of Directors that reflected the diversity of the Internet. It is probably impossible to allocate Board seats in a way that satisfies all parties concerned. On balance, we believe the concerns raised about the representation of specific groups are best addressed by a thoughtful allocation of the "user" seats as determined by the organizers of the new corporation and its Board of Directors, as discussed below.

The Green Paper identified several international membership associations and organizations to designate Board members such as APNIC, ARIN, RIPE, and the Internet Architecture Board. We continue to believe that as use of the Internet expands outside the United States, it is increasingly likely that a properly open and transparent DNS management entity will have board members from around the world. Although we do not set any mandatory minimums for global representation, this policy statement is designed to identify global representativeness as an important priority.

6. Registrars and Registries. The Green Paper proposed moving the system for registering second level domains and the management of generic top-level domains into a competitive environment by creating two market-driven businesses, registration of second level domain names and the management of gTLD registries.

a. Competitive Registrars. Comments: Commenters strongly supported establishment of a

competitive registrar system whereby registrars would obtain domain names for customers in any gTLD. Few disagreed with this position. The Green Paper proposed a set of requirements to be imposed by the new corporation on all would-be registrars. Commenters for the most part did not take exception to the proposed criteria, but a number of commenters suggested that it was inappropriate for the United States government to establish them.

Response: In response to the comments received, the U.S. Government believes that the new corporation, rather than the U.S. Government, should establish minimum criteria for registrars that are pro-competitive and provide some measure of stability for Internet users without being so onerous as to prevent entry by would-be domain name registrars from around the world. Accordingly, the proposed criteria are not part of this policy statement.

b. Competitive Registries. Comments: Many commenters voiced strong opposition to the idea of competitive and/or for-profit domain name registries, citing one of several concerns. Some suggested that top level domain names are not, by nature, ever truly generic. As such, they will tend to function as "natural monopolies" and should be regulated as a public trust and operated for the benefit of the Internet community as a whole. Others suggested that even if competition initially exists among various domain name registries, lack of portability in the naming systems would create lock-in and switching costs, making competition unsustainable in the long run. Finally, other commenters suggested that no new registry could compete meaningfully with NSI unless all domain name registries were not-for-profit and/or noncompeting.

Some commenters asserted that an experiment involving the creation of additional for-profit registries would be too risky, and irreversible once undertaken. A related concern raised by commenters addressed the rights that for-profit operators might assert with respect to the information contained in registries they operate. These commenters argued that registries would have inadequate incentives to abide by DNS policies and procedures unless the new corporation could terminate a particular entity's license to operate a registry. For-profit operators, under this line of reasoning, would be more likely to disrupt the Internet by resisting license terminations.

Commenters who supported competitive registries conceded that, in the absence of domain name portability, domain name registries could impose switching costs on users who change domain name registries. They cautioned, however, that it would be premature to conclude that switching costs provide a sufficient basis for precluding the proposed move to competitive domain name registries and cited a number of factors that could protect against registry opportunism. These commenters concluded that the potential benefits to customers from enhanced competition outweighed the risk of such opportunism. The responses to the Green Paper also included public comments on the proposed criteria for registries.

Response: Both sides of this argument have considerable merit. It is possible that additional discussion and information will shed light on this issue, and therefore, as discussed below, the U.S. Government has concluded that the issue should be left for further consideration and final action by the new corporation. The U.S. Government is of the view, however, that competitive systems generally result in greater innovation, consumer choice, and satisfaction in the long run. Moreover, the pressure of competition is likely to be the most effective means of discouraging registries from acting monopolistically. Further, in response to the comments

received, the U.S. government believes that new corporation should establish and implement appropriate criteria for gTLD registries. Accordingly, the proposed criteria are not part of this policy statement.

7. The Creation of New gTLDs. The Green Paper suggested that during the period of transition to the new corporation, the U.S. Government, in cooperation with IANA, would undertake a process to add up to five new gTLDs to the authoritative root. Noting that formation of the new corporation would involve some delay, the Green Paper contemplated new gTLDs in the short term to enhance competition and provide information to the technical community and to policy makers, while offering entities that wished to enter into the registry business an opportunity to begin offering service to customers. The Green Paper, however, noted that ideally the addition of new TLDs would be left to the new corporation.

Comments: The comments evidenced very strong support for limiting government involvement during the transition period on the matter of adding new gTLDs. Specifically, most commenters -- both U.S. and non-U.S.-- suggested that it would be more appropriate for the new, globally representative, corporation to decide these issues once it is up and running. Few believed that speed should outweigh process considerations in this matter. Others warned, however, that relegating this contentious decision to a new and untested entity early in its development could fracture the organization. Others argued that the market for a large or unlimited number of new gTLDs should be opened immediately. They asserted that there are no technical impediments to the addition of a host of gTLDs, and the market will decide which TLDs succeed and which do not. Further, they pointed out that there are no artificial or arbitrary limits in other media on the number of places in which trademark holders must defend against dilution.

Response: The challenge of deciding policy for the addition of new domains will be formidable. We agree with the many commenters who said that the new corporation would be the most appropriate body to make these decisions based on global input. Accordingly, as supported by the preponderance of comments, the U.S. Government will not implement new gTLDs at this time.

At least in the short run, a prudent concern for the stability of the system suggests that expansion of gTLDs proceed at a deliberate and controlled pace to allow for evaluation of the impact of the new gTLDs and well-reasoned evolution of the domain space. New top level domains could be created to enhance competition and to enable the new corporation to evaluate the functioning, in the new environment, of the root server system and the software systems that enable shared registration.

8. The Trademark Dilemma. When a trademark is used as a domain name without the trademark owner's consent, consumers may be misled about the source of the product or service offered on the Internet, and trademark owners may not be able to protect their rights without very expensive litigation. For cyberspace to function as an effective commercial market, businesses must have confidence that their trademarks can be protected. On the other hand, management of the Internet must respond to the needs of the Internet community as a whole, and not trademark owners exclusively. The Green Paper proposed a number of steps to balance the needs of domain name holders with the legitimate concerns of trademark owners in the interest of the Internet community as a whole. The proposals were designed to provide trademark holders with the same rights they have in the physical world, to ensure transparency, and to guarantee a dispute resolution mechanism with resort to a court system.

The Green Paper also noted that trademark holders have expressed concern that domain name registrants in faraway places may be able to infringe their rights with no convenient jurisdiction available in which the trademark owner could enforce a judgment protecting those rights. The Green Paper solicited comments on an arrangement whereby, at the time of registration, registrants would agree to submit a contested domain name to the jurisdiction of the courts where the registry is domiciled, where the registry database is maintained, or where the "A" root server is maintained.

Comments: Commenters largely agreed that domain name registries should maintain up-to-date, readily searchable domain name databases that contain the information necessary to locate a domain name holder. In general commenters did not take specific issue with the database specifications proposed in Appendix 2 of the Green Paper, although some commenters proposed additional requirements. A few commenters noted, however, that privacy issues should be considered in this context.

A number of commenters objected to NSI's current business practice of allowing registrants to use domain names before they have actually paid any registration fees. These commenters pointed out that this practice has encouraged cybersquatters and increased the number of conflicts between domain name holders and trademark holders. They suggested that domain name applicants should be required to pay before a desired domain name becomes available for use.

Most commenters also favored creation of an on-line dispute resolution mechanism to provide inexpensive and efficient alternatives to litigation for resolving disputes between trademark owners and domain name registrants. The Green Paper contemplated that each registry would establish specified minimum dispute resolution procedures, but remain free to establish additional trademark protection and dispute resolution mechanisms. Most commenters did not agree with this approach, favoring instead a uniform approach to resolving trademark/domain name disputes.

Some commenters noted that temporary suspension of a domain name in the event of an objection by a trademark holder within a specified period of time after registration would significantly extend trademark holders' rights beyond what is accorded in the real world. They argued that such a provision would create a de facto waiting period for name use, as holders would need to suspend the use of their name until after the objection window had passed to forestall an interruption in service. Further, they argue that such a system could be used anti-competitively to stall a competitor's entry into the marketplace.

The suggestion that domain name registrants be required to agree at the time of registration to submit disputed domain names to the jurisdiction of specified courts was supported by U.S. trademark holders but drew strong protest from trademark holders and domain name registrants outside the United States. A number of commenters characterized this as an inappropriate attempt to establish U.S. trademark law as the law of the Internet. Others suggested that existing jurisdictional arrangements are satisfactory. They argue that establishing a mechanism whereby the judgment of a court can be enforced absent personal jurisdiction over the infringer would upset the balance between the interests of trademark holders and those of other members of the Internet community.

Response: The U.S. Government will seek international support to call upon the World Intellectual Property Organization (WIPO) to initiate a balanced and transparent process, which includes the participation of trademark holders and members of the Internet community who are not trademark holders, to (1) develop recommendations for a uniform approach to resolving trademark/domain name disputes involving cybersquatting (as opposed to conflicts between trademark holders with legitimate competing rights), (2) recommend a process for protecting famous trademarks in the generic top level domains, and (3) evaluate the effects, based on studies conducted by independent organizations, such as the National Research Council of the National Academy of Sciences, of adding new gTLDs and related dispute resolution procedures on trademark and intellectual property holders. These findings and recommendations could be submitted to the board of the new corporation for its consideration in conjunction with its development of registry and registrar policy and the creation and introduction of new gTLDs.

In trademark/domain name conflicts, there are issues of jurisdiction over the domain name in controversy and jurisdiction over the legal persons (the trademark holder and the domain name holder). This document does not attempt to resolve questions of personal jurisdiction in trademark/domain name conflicts. The legal issues are numerous, involving contract, conflict of laws, trademark, and other questions. In addition, determining how these various legal principles will be applied to the borderless Internet with an unlimited possibility of factual scenarios will require a great deal of thought and deliberation. Obtaining agreement by the parties that jurisdiction over the domain name will be exercised by an alternative dispute resolution body is likely to be at least somewhat less controversial than agreement that the parties will subject themselves to the personal jurisdiction of a particular national court. Thus, the references to jurisdiction in this policy statement are limited to jurisdiction over the domain name in dispute, and not to the domain name holder.

In order to strike a balance between those commenters who thought that registrars and registries should not themselves be engaged in disputes between trademark owners and domain name holders and those commenters who thought that trademark owners should have access to a reliable and up-to-date database, we believe that a database should be maintained that permits trademark owners to obtain the contact information necessary to protect their trademarks.

Further, it should be clear that whatever dispute resolution mechanism is put in place by the new corporation, that mechanism should be directed toward disputes about cybersquatting and cybersquatting and not to settling the disputes between two parties with legitimate competing interests in a particular mark. Where legitimate competing rights are concerned, disputes are rightly settled in an appropriate court.

Under the revised plan, we recommend that domain name holders agree to submit infringing domain names to the jurisdiction of a court where the "A" root server is maintained, where the registry is domiciled, where the registry database is maintained, or where the registrar is domiciled. We believe that allowing trademark infringement suits to be brought wherever registrars and registries are located will help ensure that all trademark holders - both U.S. and non-U.S. - have the opportunity to bring suits in a convenient jurisdiction and enforce the judgments of those courts.

Under the revised plan, we also recommend that, whatever options are chosen by the new corporation, each registrar should insist that payment be made for the domain name before it becomes available to the applicant. The failure to make a domain name applicant pay for its use of a domain name has encouraged cyberpirates and is a practice that should end as soon as possible.

9. Competition Concerns.

Comments: Several commenters suggested that the U.S. Government should provide full antitrust immunity or indemnification for the new corporation. Others noted that potential antitrust liability would provide an important safeguard against institutional inflexibility and abuses of power.

Response: Applicable antitrust law will provide accountability to and protection for the international Internet community. Legal challenges and lawsuits can be expected within the normal course of business for any enterprise and the new corporation should anticipate this reality.

The Green Paper envisioned the new corporation as operating on principles similar to those of a standard-setting body. Under this model, due process requirements and other appropriate processes that ensure transparency, equity and fair play in the development of policies or practices would need to be included in the new corporation's originating documents. For example, the new corporation's activities would need to be open to all persons who are directly affected by the entity, with no undue financial barriers to participation or unreasonable restrictions on participation based on technical or other such requirements. Entities and individuals would need to be able to participate by expressing a position and its basis, having that position considered, and appealing if adversely affected. Further, the decision making process would need to reflect a balance of interests and should not be dominated by any single interest category. If the new corporation behaves this way, it should be less vulnerable to antitrust challenges.

10. The NSI Agreement.

Comments: Many commenters expressed concern about continued administration of key gTLDs by NSI. They argued that this would give NSI an unfair advantage in the marketplace and allow NSI to leverage economies of scale across their gTLD operations. Some commenters also believe the Green Paper approach would have entrenched and institutionalized NSI's dominant market position over the key domain name going forward. Further, many commenters expressed doubt that a level playing field between NSI and the new registry market entrants could emerge if NSI retained control over .com, .net, and .org.

Response: The cooperative agreement between NSI and the U.S. Government is currently in its ramp down period. The U.S. Government and NSI will shortly commence discussions about the terms and conditions governing the ramp-down of the cooperative agreement. Through these discussions, the U.S. Government expects NSI to agree to take specific actions, including commitments as to pricing and equal access, designed to permit the development of

competition in domain name registration and to approximate what would be expected in the presence of marketplace competition. The U.S. Government expects NSI to agree to act in a manner consistent with this policy statement, including recognizing the role of the new corporation to establish and implement DNS policy and to establish terms (including licensing terms) applicable to new and existing gTLD registries under which registries, registrars and gTLDs are permitted to operate. Further, the U.S. Government expects NSI to agree to make available on an ongoing basis appropriate databases, software, documentation thereof, technical expertise, and other intellectual property for DNS management and shared registration of domain names.

11. A Global Perspective

Comments: A number of commenters expressed concern that the Green Paper did not go far enough in globalizing the administration of the domain name system. Some believed that international organizations should have a role in administering the DNS. Others complained that incorporating the new corporation in the United States would entrench control over the Internet with the U.S. Government. Still others believed that the awarding by the U.S. Government of up to five new gTLDs would enforce the existing dominance of U.S. entities over the gTLD system.

Response: The U.S. Government believes that the Internet is a global medium and that its technical management should fully reflect the global diversity of Internet users. We recognize the need for and fully support mechanisms that would ensure international input into the management of the domain name system. In withdrawing the U.S. Government from DNS management and promoting the establishment of a new, non-governmental entity to manage Internet names and addresses, a key U.S. Government objective has been to ensure that the increasingly global Internet user community has a voice in decisions affecting the Internet's technical management.

We believe this process has reflected our commitment. Many of the comments on the Green Paper were filed by foreign entities, including governments. Our dialogue has been open to all Internet users - foreign and domestic, government and private - during this process, and we will continue to consult with the international community as we begin to implement the transition plan outlined in this paper.

12. The Intellectual Infrastructure Fund.

In 1995, NSF authorized NSI to assess domain name registrants a \$50 fee per year for the first two years, 30 percent of which was to be deposited in the Intellectual Infrastructure Fund (IIF), a fund to be used for the preservation and enhancement of the intellectual infrastructure of the Internet.

Comments: Very few comments referenced the IIF. In general, the comments received on the issue supported either refunding the IIF portion of the domain name registration fee to domain registrants from whom it had been collected or applying the funds toward Internet infrastructure development projects generally, including funding the establishment of the new corporation.

Response: As proposed in the Green Paper, allocation of a portion of domain name registration fees to this fund terminated as of March 31, 1998. NSI has reduced its registration fees accordingly. The IIF remains the subject of litigation. The U.S. Government takes the position that its collection has recently been ratified by the U.S. Congress,[\(19\)](#)

and has moved to dismiss the claim that it was unlawfully collected. This matter has not been finally resolved, however.

13. The .us Domain.

At present, the IANA administers .us as a locality-based hierarchy in which second-level domain space is allocated to states and U.S. territories.[\(20\)](#) This name space is further subdivided into localities. General registration under localities is performed on an exclusive basis by private firms that have requested delegation from IANA. The .us name space has typically been used by branches of state and local governments, although some commercial names have been assigned. Where registration for a locality has not been delegated, the IANA itself serves as the registrar.

Comments: Many commenters suggested that the pressure for unique identifiers in the .com gTLD could be relieved if commercial use of the .us space was encouraged. Commercial users and trademark holders, however, find the current locality-based system too cumbersome and complicated for commercial use. They called for expanded use of the .us TLD to alleviate some of the pressure for new generic TLDs and reduce conflicts between American companies and others vying for the same domain name. Most commenters support an evolution of the .us domain designed to make this name space more attractive to commercial users.

Response: Clearly, there is much opportunity for enhancing the .us domain space, and .us could be expanded in many ways without displacing the current structure. Over the next few months, the U.S. Government will work with the private sector and state and local governments to determine how best to make the .us domain more attractive to commercial users. Accordingly, the Department of Commerce will seek public input on this important issue.

ADMINISTRATIVE LAW REQUIREMENTS:

On February 20, 1998, NTIA published for public comment a proposed rule regarding the domain name registration system. That proposed rule sought comment on substantive regulatory provisions, including but not limited to a variety of specific requirements for the membership of the new corporation, the creation during a transition period of a specified number of new generic top level domains and minimum dispute resolution and other procedures related to trademarks. As discussed elsewhere in this document, in response to public comment these aspects of the original proposal have been eliminated. In light of the public comment and the changes to the proposal made as a result, as well as the continued rapid technological development of the Internet, the Department of Commerce has determined that it should issue a general statement of policy, rather than define or impose a substantive regulatory regime for the domain name system. As such, this policy statement is not a

substantive rule, does not contain mandatory provisions and does not itself have the force and effect of law.

The Assistant General Counsel for Legislation and Regulation, Department of Commerce, certified to the Chief Counsel for Advocacy, Small Business Administration, that, for purposes of the Regulatory Flexibility Act, 5 U.S.C. §§ 601 et seq., the proposed rule on this matter, if adopted, would not have a significant economic impact on a substantial number of small entities. The factual basis for this certification was published along with the proposed rule. No comments were received regarding this certification. As such, and because this final rule is a general statement of policy, no final regulatory flexibility analysis has been prepared.

This general statement of policy does not contain any reporting or record keeping requirements subject to the Paperwork Reduction Act, 44 U.S.C. ch. 35 (PRA). However, at the time the U.S. Government might seek to enter into agreements as described in this policy statement, a determination will be made as to whether any reporting or record keeping requirements subject to the PRA are being implemented. If so, the NTIA will, at that time, seek approval under the PRA for such requirement(s) from the Office of Management and Budget.

This statement has been determined to be not significant for purposes of Office of Management and Budget review under Executive Order 12866, entitled Regulatory Planning and Review.

REVISED POLICY STATEMENT:

This document provides the U.S. Government's policy regarding the privatization of the domain name system in a manner that allows for the development of robust competition and that facilitates global participation in the management of Internet names and addresses.

The policy that follows does not propose a monolithic structure for Internet governance. We doubt that the Internet should be governed by one plan or one body or even by a series of plans and bodies. Rather, we seek a stable process to address the narrow issues of management and administration of Internet names and numbers on an ongoing basis.

As set out below, the U.S. Government is prepared to recognize, by entering into agreement with, and to seek international support for, a new, not-for-profit corporation formed by private sector Internet stakeholders to administer policy for the Internet name and address system. Under such agreement(s) or understanding(s), the new corporation would undertake various responsibilities for the administration of the domain name system now performed by or on behalf of the U.S. Government or by third parties under arrangements or agreements with the U.S. Government. The U.S. Government would also ensure that the new corporation has appropriate access to needed databases and software developed under those agreements.

The Coordinated Functions

Management of number addresses is best done on a coordinated basis. Internet numbers are a unique, and at least currently, a limited resource. As technology evolves, changes may be

needed in the number allocation system. These changes should also be coordinated.

Similarly, coordination of the root server network is necessary if the whole system is to work smoothly. While day-to-day operational tasks, such as the actual operation and maintenance of the Internet root servers, can be dispersed, overall policy guidance and control of the TLDs and the Internet root server system should be vested in a single organization that is representative of Internet users around the globe.

Further, changes made in the administration or the number of gTLDs contained in the authoritative root system will have considerable impact on Internet users throughout the world. In order to promote continuity and reasonable predictability in functions related to the root zone, the development of policies for the addition, allocation, and management of gTLDs and the establishment of domain name registries and domain name registrars to host gTLDs should be coordinated.

Finally, coordinated maintenance and dissemination of the protocol parameters for Internet addressing will best preserve the stability and interconnectivity of the Internet. We are not, however, proposing to expand the functional responsibilities of the new corporation beyond those exercised by IANA currently.

In order to facilitate the needed coordination, Internet stakeholders are invited to work together to form a new, private, not-for-profit corporation to manage DNS functions. The following discussion reflects current U.S. Government views of the characteristics of an appropriate management entity. What follows is designed to describe the characteristics of an appropriate entity generally.

Principles for a New System. In making a decision to enter into an agreement to establish a process to transfer current U.S. government management of DNS to such a new entity, the U.S. will be guided by, and consider the proposed entity's commitment to, the following principles:

The U.S. Government should end its role in the Internet number and name address system in a manner that ensures the stability of the Internet. The introduction of a new management system should not disrupt current operations or create competing root systems. During the transition and thereafter, the stability of the Internet should be the first priority of any DNS management system. Security and reliability of the DNS are important aspects of stability, and as a new DNS management system is introduced, a comprehensive security strategy should be developed.

2. Competition.

The Internet succeeds in great measure because it is a decentralized system that encourages innovation and maximizes individual freedom. Where possible, market mechanisms that support competition and consumer choice should drive the management of the Internet because they will lower costs, promote innovation, encourage diversity, and enhance user choice and satisfaction.

3. Private, Bottom-Up Coordination.

Certain management functions require coordination. In these cases, responsible, private-sector action is preferable to government control. A private coordinating process is likely to be more flexible than government and to move rapidly enough to meet the changing needs of the Internet and of Internet users. The private process should, as far as possible, reflect the bottom-up governance that has characterized development of the Internet to date.

4. Representation.

The new corporation should operate as a private entity for the benefit of the Internet community as a whole. The development of sound, fair, and widely accepted policies for the management of DNS will depend on input from the broad and growing community of Internet users. Management structures should reflect the functional and geographic diversity of the Internet and its users. Mechanisms should be established to ensure international participation in decision making.

- 1. Stability

Purpose. The new corporation ultimately should have the authority to manage and perform a specific set of functions related to coordination of the domain name system, including the authority necessary to:

2) oversee operation of the authoritative Internet root server system;

3) oversee policy for determining the circumstances under which new TLDs are added to the root system; and

4) coordinate the assignment of other Internet technical parameters as needed to maintain universal connectivity on the Internet.

- 1) set policy for and direct allocation of IP number blocks to regional Internet number registries;

Funding. Once established, the new corporation could be funded by domain name registries, regional IP registries, or other entities identified by the Board.

Staff. We anticipate that the new corporation would want to make arrangements with current IANA staff to provide continuity and expertise over the course of transition. The new corporation should secure necessary expertise to bring rigorous management to the organization.

Incorporation. We anticipate that the new corporation's organizers will include representatives of regional Internet number registries, Internet engineers and computer scientists, domain name registries, domain name registrars, commercial and noncommercial users, Internet service providers, international trademark holders and Internet experts highly respected throughout the international Internet community. These incorporators should include substantial representation from around the world.

As these functions are now performed in the United States, by U.S. residents, and to ensure stability, the new corporation should be headquartered in the United States, and incorporated in the U.S. as a not-for-profit corporation. It should, however, have a board of directors from around the world. Moreover, incorporation in the United States is not intended to supplant or displace the laws of other countries where applicable.

Structure. The Internet community is already global and diverse and likely to become more so over time. The organization and its board should derive legitimacy from the participation of key stakeholders. Since the organization will be concerned mainly with numbers, names and protocols, its board should represent membership organizations in each of these areas, as well as the direct interests of Internet users.

The Board of Directors for the new corporation should be balanced to equitably represent the interests of IP number registries, domain name registries, domain name registrars, the technical community, Internet service providers (ISPs), and Internet users (commercial, not-for-profit, and individuals) from around the world. Since these constituencies are international, we would expect the board of directors to be broadly representative of the global Internet community.

As outlined in appropriate organizational documents, (Charter, Bylaws, etc.) the new corporation should:

2) direct the Interim Board to establish a system for electing a Board of Directors for the new corporation that insures that the new corporation's Board of Directors reflects the geographical and functional diversity of the Internet, and is sufficiently flexible to permit evolution to reflect changes in the constituency of Internet stakeholders. Nominations to the Board of Directors should preserve, as much as possible, the tradition of bottom-up governance of the Internet, and Board Members should be elected from membership or other associations open to all or through other mechanisms that ensure broad representation and participation in the election process.

3) direct the Interim Board to develop policies for the addition of TLDs, and establish the qualifications for domain name registries and domain name registrars within the system.

4) restrict official government representation on the Board of Directors without precluding governments and intergovernmental organizations from participating as Internet users or in a non-voting advisory capacity.

- 1) appoint, on an interim basis, an initial Board of Directors (an Interim Board) consisting of individuals representing the functional and geographic diversity of the

Internet community. The Interim Board would likely need access to legal counsel with expertise in corporate law, competition law, intellectual property law, and emerging Internet law. The Interim Board could serve for a fixed period, until the Board of Directors is elected and installed, and we anticipate that members of the Interim Board would not themselves serve on the Board of Directors of the new corporation for a fixed period thereafter.

Governance. The organizing documents (Charter, Bylaws, etc.) should provide that the new corporation is governed on the basis of a sound and transparent decision-making process, which protects against capture by a self-interested faction, and which provides for robust, professional management of the new corporation. The new corporation could rely on separate, diverse, and robust name and number councils responsible for developing, reviewing, and recommending for the board's approval policy related to matters within each council's competence. Such councils, if developed, should also abide by rules and decision-making processes that are sound, transparent, protect against capture by a self-interested party and provide an open process for the presentation of petitions for consideration. The elected Board of Directors, however, should have final authority to approve or reject policies recommended by the councils.

Operations. The new corporation's processes should be fair, open and pro-competitive, protecting against capture by a narrow group of stakeholders. Typically this means that decision-making processes should be sound and transparent; the basis for corporate decisions should be recorded and made publicly available. Super-majority or even consensus requirements may be useful to protect against capture by a self-interested faction. The new corporation does not need any special grant of immunity from the antitrust laws so long as its policies and practices are reasonably based on, and no broader than necessary to promote the legitimate coordinating objectives of the new corporation. Finally, the commercial importance of the Internet necessitates that the operation of the DNS system, and the operation of the authoritative root server system should be secure, stable, and robust.

The new corporation's charter should provide a mechanism whereby its governing body will evolve to reflect changes in the constituency of Internet stakeholders. The new corporation could, for example, establish an open process for the presentation of petitions to expand board representation.

Trademark Issues. Trademark holders and domain name registrants and others should have access to searchable databases of registered domain names that provide information necessary to contact a domain name registrant when a conflict arises between a trademark holder and a domain name holder.⁽²¹⁾ To this end, we anticipate that the policies established by the new corporation would provide that following information would be included in all registry databases and available to anyone with access to the Internet:

- up-to-date and historical chain of registration information for the domain name;
- a mail address for service of process;

- the date of domain name registration;
- the date that any objection to the registration of the domain name is filed; and
- any other information determined by the new corporation to be reasonably necessary to resolve disputes between domain name registrants and trademark holders expeditiously.
 - - up-to-date registration and contact information;

Further, the U.S. Government recommends that the new corporation adopt policies whereby:

- 2) Domain name registrants would agree, at the time of registration or renewal, that in cases involving cybersquatting or cybersquatting (as opposed to conflicts between legitimate competing rights holders), they would submit to and be bound by alternative dispute resolution systems identified by the new corporation for the purpose of resolving those conflicts. Registries and Registrars should be required to abide by decisions of the ADR system.
- 3) Domain name registrants would agree, at the time of registration or renewal, to abide by processes adopted by the new corporation that exclude, either pro-actively or retroactively, certain famous trademarks from being used as domain names (in one or more TLDs) except by the designated trademark holder.
- 4) Nothing in the domain name registration agreement or in the operation of the new corporation should limit the rights that can be asserted by a domain name registrant or trademark owner under national laws.
 - 1) Domain registrants pay registration fees at the time of registration or renewal and agree to submit infringing domain names to the authority of a court of law in the jurisdiction in which the registry, registry database, registrar, or the "A" root servers are located.

THE TRANSITION

Based on the processes described above, the U.S. Government believes that certain actions should be taken to accomplish the objectives set forth above. Some of these steps must be taken by the government itself, while others will need to be taken by the private sector. For example, a new not-for-profit organization must be established by the private sector and its Interim Board chosen. Agreement must be reached between the U.S. Government and the new corporation relating to transfer of the functions currently performed by IANA. NSI and the U.S. Government must reach agreement on the terms and conditions of NSI's evolution into one competitor among many in the registrar and registry marketplaces. A process must be laid out for making the management of the root server system more robust and secure. A relationship between the U.S. Government and the new corporation must be developed to

transition DNS management to the private sector and to transfer management functions.

During the transition the U.S. Government expects to:

2) enter into agreement with the new corporation under which it assumes responsibility for management of the domain name space;

3) ask WIPO to convene an international process including individuals from the private sector and government to develop a set of recommendations for trademark/domain name dispute resolutions and other issues to be presented to the Interim Board for its consideration as soon as possible;

4) consult with the international community, including other interested governments as it makes decisions on the transfer; and

5) undertake, in cooperation with IANA, NSI, the IAB, and other relevant organizations from the public and private sector, a review of the root server system to recommend means to increase the security and professional management of the system. The recommendations of the study should be implemented as part of the transition process; and the new corporation should develop a comprehensive security strategy for DNS management and operations.

- 1) ramp down the cooperative agreement with NSI with the objective of introducing competition into the domain name space. Under the ramp down agreement NSI will agree to (a) take specific actions, including commitments as to pricing and equal access, designed to permit the development of competition in domain name registration and to approximate what would be expected in the presence of marketplace competition, (b) recognize the role of the new corporation to establish and implement DNS policy and to establish terms (including licensing terms) applicable to new and existing gTLDs and registries under which registries, registrars and gTLDs are permitted to operate, (c) make available on an ongoing basis appropriate databases, software, documentation thereof, technical expertise, and other intellectual property for DNS management and shared registration of domain names;

ENDNOTES

1. Available at <<http://www.ecommerce.gov>>.

2. July 2, 1997 RFC and public comments are located at:
<<http://www.ntia.doc.gov/ntiahome/domainname/index.html>>.

3. ³The RFC, the Green Paper, and comments received in response to both documents are available on the Internet

at the following address: <http://www.ntia.doc.gov>. Additional comments were submitted after March 23, 1998. These comments have been considered and treated as part of the official record and have been separately posted at the same site, although the comments were not received by the deadline established in the February 20, 1998 Federal Register Notice.

4. See Administrative Law Requirements at p. 19.

5. See Scientific and Advanced-Technology Act of 1992; Pub. L. 102-476 § 4(9), 106 Stat. 2297, 2300 (codified at 42 U.S.C. § 1862 (a)).

6. An unofficial diagram of the general geographic location and institutional affiliations of the 13 Internet root servers, prepared by Anthony Rutkowski, is available at <http://www.wia.org/pub/rootserv.html>.

7. For further information about these systems see: name.space: <http://namespace.pgmedia.net>; AlterNIC: <http://www.alternic.net>; eDNS: <http://www.edns.net>. Reference to these organizations does not constitute an endorsement of their commercial activities.

8. Lengthy discussions by the Internet technical community on DNS issues generally and on the Postel DNS proposal took place on the *newdom*, *com-priv*, *ietf* and *domain-policy* Internet mailing lists.

9. ² See *draft-Postel-iana-itld-admin-01.txt*; available at <http://www.newdom.com/archive>.

10. For further information about the IAHC see: <http://www.iahc.org> and related links. Reference to this organization does not constitute an endorsement of the commercial activities of its related organizations.

11. December 1996 draft: *draft-iahc-gtldspec-00.txt*; available at <http://info.internet.isi.edu:80/in-drafts/files>.

12. The IAHC final report is available at <http://www.iahc.org/draft-iahc-recommend-00.html>.

13. See generally public comments received in response to July 2, 1997 RFC located at <http://www.ntia.doc.gov/ntiahome/domainname/email>.

14. For a discussion, see Congressional testimony of Assistant Secretary of Commerce Larry Irving. Before the House Committee on Science, Subcommittee on Basic Research, September 25, 1997 available at <http://www.ntia.doc.gov/ntiahome/domainname/email>.

15. See generally public comments received in response to July 2, 1997 RFC located at <http://www.ntia.doc.gov/ntiahome/domainname/email>.

16. ¹⁶ The document was published in the *Federal Register* on February 20, 1998, (63 Fed. Reg. 8826 (Feb. 20, 1998)).

17. As used herein, the term "new corporation" is intended to refer to an entity formally organized under well recognized and established business law standards.

18. As noted in the Summary, the President directed the Secretary of Commerce to privatize DNS in a manner that increases competition and facilitates international participation in its management. Accordingly, the Department of Commerce will lead the coordination of the U.S. government's role in this transition.

19. 1998 Supplemental Appropriations and Rescissions Act; Pub. L. 105-174; 112 Stat. 58.

20. ²⁰ Management principles for the .us domain space are set forth in Internet RFC 1480, (<http://www.isi.edu/in-notes/rfc1480.txt>).

21. These databases would also benefit domain name holders by making it less expensive for new registrars and

registries to identify potential customers, enhancing competition and lowering prices.

[National Telecommunications and Information Administration](#)

1401 Constitution Ave., NW Washington, DC 20230

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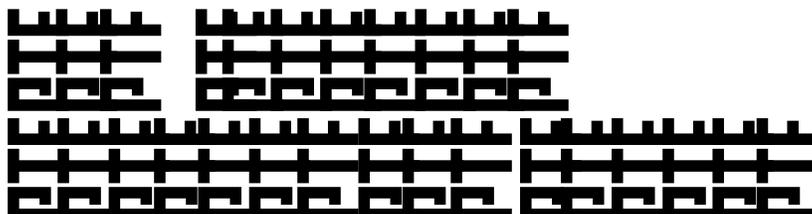
Links

[1] <https://www.ntia.doc.gov/category/domain-name-system>

[2] <mailto:dnspolicy@ntia.doc.gov>

EXHIBIT JZ-28

[NIALL MCKAY](#) SECURITY 09.17.98 04:00 AM



THE INTERNET IS getting a new boss. And now the finalist for the job has a name.

On Thursday, the [Internet Assigned Names Authority](#) and [Network Solutions](#) – which have shared responsibility for minding the Net – released a [final draft](#) proposal for the organization that will govern the Internet of the future.

The new nonprofit body will be known as the Internet Corporation for Assigned Names and Numbers. It was not an easy birth.

The draft for the ICANN was only submitted following often-rancorous sessions and [bitter rows](#) among the Internet's many stakeholders. Now they'll have the opportunity to weigh in on the



current proposal. Their responses are expected in the "next day or two."

The new draft addresses two key points: First, new language has been added to the ICANN's bylaws ensuring that anyone affected by a pending ICANN decision would be notified in advance of the results.

According to IANA director Jon Postel, the new draft also directs the board to include at-large members - including

representatives of the Internet Engineering Task Force and Internet Architecture Board – in the group’s membership and electoral processes.

Until now, Postel has been the Internet’s own Obi-Wan Kenobi, the sage who guided the Net from its sleepy academic genesis to its present form. But Postel is no longer interested in playing politics and wants to concentrate on offering technical assistance to the ICANN. The awesome task he now faces is the divestiture of his virtual kingdom.

Postel began drafting proposals for a new IANA after the Clinton administration asked for the transfer of IANA in a 1997 [White Paper](#).

In the past, Network Solutions of Herndon, Virginia, has managed the Internet domain-name system under a lucrative federal contract, while IANA managed other administrative issues. But the US government no longer wants sole jurisdiction of IANA, preferring to give the international community and commercial interests a greater say in Internet policy decisions.

“The nature of the Internet is very diverse, so a new organization needs to be international, legally binding, democratic in nature, and governed by the stakeholders of the Internet,” White

House technology adviser Ira Magaziner told Wired News.

"If the technical community wants to keep the US government out of the process, then they must account for minority interests," said Jay Fenello, president of [Iperdome](#), a domain-registration company based in Atlanta.

ICANN will have executive responsibility for the technical aspects of the Internet – including the management of its infrastructure, or plumbing – as well as for policy decisions, including technological standards and protocols. Administration of the organization is expected to cost between US\$4 million to \$5 million annually. The money will come from domain-name registrations.

To be based in Los Angeles, ICANN will work closely with the groups that currently decide technical policy issues, including the [Internet Architecture Board](#), a group founded in 1983 that provides technical advice to the [Internet Society](#) and oversees the Internet Engineering Task Force.

The new proposal on ICANN is be presented for comments from interested players worldwide before the final document is delivered to Magaziner on 30 September.

Robert Shaw, adviser on global infrastructure for the [International Telecom Union](#) in Geneva, said he would recommend that his organization back the ICANN. "The world is not ready for a true Internet-wide democracy," he said. "Does some 18-year-old with a dial-up modem get the same voting rights as AT&T?"

Many stakeholders objected to previous drafts of the proposal for giving too much power to the new organization's board and making too few provisions to protect commercial interests.

Under the ICANN proposal, Postel and his advisers will nominate an interim board of directors that will be beholden to the Net's many constituents. At issue was whether the the body would become a membership organization with an elected board of directors or a virtual oligarchy with an appointed board of trustees. The proposal suggests a compromise: It will be a membership organization, but the new board will decide the membership process.

Fenello said the proposed bylaws are too broad. "These board members have no restrictions as to what they can do and are not accountable to anybody. They could rip up existing policy if they wanted to."

IANA and Network Solutions have recently been embroiled in negotiations over the

administration of top-level domain names. There was an outcry when they cancelled a meeting where the draft proposal was to have been discussed.

"We were concerned that while many of us have been attending meetings all over the world to come up with a working proposal, IANA and NSI went behind closed doors and hammered out their own agreement," said Ellen Rony, co-author of the *Domain Name Handbook* who sits on the steering committee of the [International Forum on the White Paper](#).

Network Solutions has two main concerns about the policy, said Chris Clough, NSI's director of corporate communications. "Firstly, there needs to be a series of checks and balances of the new organization's power. And, secondly, it should include greater participation from commercial interests."

The latest draft proposal is designed to quell many of those issues, said Magaziner. "Of course it's the Internet," he added, "and there is no way that everybody will be happy."

[VIEW COMMENTS](#)

EXHIBIT JZ-29

MEMORANDUM OF UNDERSTANDING BETWEEN
THE U.S. DEPARTMENT OF COMMERCE
AND
INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS

I. PARTIES

This document constitutes an agreement between the U.S. Department of Commerce (DOC or USG) and the Internet Corporation for Assigned Names and Numbers (ICANN), a not-for-profit corporation.

II. PURPOSE

A. Background

On July 1, 1997, as part of the Administration's Framework for Global Electronic Commerce, the President directed the Secretary of Commerce to privatize the management of the domain name system (DNS) in a manner that increases competition and facilitates international participation in its management.

On June 5, 1998, the DOC published its Statement of Policy, *Management of Internet Names and Addresses*, 63 *Fed. Reg.* 31741(1998) (Statement of Policy). The Statement of Policy addressed the privatization of the technical management of the DNS in a manner that allows for the development of robust competition in the management of Internet names and addresses. In the Statement of Policy, the DOC stated its intent to enter an agreement with a not-for-profit entity to establish a process to transition current U.S. Government management of the DNS to such an entity based on the principles of stability, competition, bottom-up coordination, and representation.

B. Purpose

Before making a transition to private sector DNS management, the DOC requires assurances that the private sector has the capability and resources to assume the important responsibilities related to the technical management of the DNS. To secure these assurances, the Parties will collaborate on this DNS Project (DNS Project). In the DNS Project, the Parties will jointly design, develop, and test the mechanisms, methods, and procedures that should be in place and the steps necessary to transition management responsibility for DNS functions now performed by, or on behalf of, the U.S. Government to a private-sector not-for-profit entity. Once testing is successfully completed, it is contemplated that management of the DNS will be transitioned to the mechanisms, methods, and procedures designed and developed in the DNS Project.

In the DNS Project, the parties will jointly design, develop, and test the mechanisms, methods, and procedures to carry out the following DNS management functions:

- a. Establishment of policy for and direction of the allocation of IP number blocks;
- b. Oversight of the operation of the authoritative root server system;
- c. Oversight of the policy for determining the circumstances under which new top level domains would be added to the root system;
- d. Coordination of the assignment of other Internet technical parameters as needed to maintain universal connectivity on the Internet; and
- e. Other activities necessary to coordinate the specified DNS management functions, as agreed by the Parties.

The Parties will jointly design, develop, and test the mechanisms, methods, and procedures that will achieve the transition without disrupting the functional operation of the Internet. The Parties will also prepare a joint DNS Project Report that documents the conclusions of the design, development, and testing.

DOC has determined that this project can be done most effectively with the participation of ICANN. ICANN has a stated purpose to perform the described coordinating functions for Internet names and addresses and is the organization that best demonstrated that it can accommodate the broad and diverse interest groups that make up the Internet community.

C. The Principles

The Parties will abide by the following principles:

1. Stability

This Agreement promotes the stability of the Internet and allows the Parties to plan for a deliberate move from the existing structure to a private-sector structure without disruption to the functioning of the DNS. The Agreement calls for the design, development, and testing of a new management system that will not harm current functional operations.

2. Competition

This Agreement promotes the management of the DNS in a manner that will permit market mechanisms to support competition and consumer choice in the technical management of the DNS. This competition will lower costs, promote innovation, and enhance user choice and satisfaction.

3. Private, Bottom-Up Coordination

This Agreement is intended to result in the design, development, and testing of a private coordinating process that is flexible and able to move rapidly enough to meet the changing needs of the Internet and of Internet users. This Agreement is intended to foster the development of a private sector management system that, as far as possible, reflects a system of bottom-up management.

4. Representation.

This Agreement promotes the technical management of the DNS in a manner that reflects the global and functional diversity of Internet users and their needs. This Agreement is intended to promote the design, development, and testing of mechanisms to solicit public input, both domestic and international, into a private-sector decision making process. These mechanisms will promote the flexibility needed to adapt to changes in the composition of the Internet user community and their needs.

III. AUTHORITIES

A. DOC has authority to participate in the DNS Project with ICANN under the following authorities:

(1) 15 U.S.C. § 1525, the DOC's Joint Project Authority, which provides that the DOC may enter into joint projects with nonprofit, research, or public organizations on matters of mutual interest, the cost of which is equitably apportioned;

(2) 15 U.S.C. § 1512, the DOC's authority to foster, promote, and develop foreign and domestic commerce;

(3) 47 U.S.C. § 902, which specifically authorizes the National Telecommunications and Information Administration (NTIA) to coordinate the telecommunications activities of the Executive Branch and assist in the formulation of policies and standards for those activities including, but not limited to, considerations of interoperability, privacy, security, spectrum use, and emergency readiness;

(4) Presidential Memorandum on Electronic Commerce, 33 Weekly Comp. Presidential Documents 1006 (July 1, 1997), which directs the Secretary of Commerce to transition DNS management to the private sector; and

(5) Statement of Policy, *Management of Internet Names and Addresses*, (63 Fed. Reg. 31741(1998) (Attachment A), which describes the manner in which the Department of Commerce will transition DNS management to the private sector.

B. ICANN has the authority to participate in the DNS Project, as evidenced in its Articles of Incorporation (Attachment B) and Bylaws (Attachment C). Specifically, ICANN has stated that its business purpose is to:

(i) coordinate the assignment of Internet technical parameters as needed to maintain universal connectivity on the Internet;

(ii) perform and oversee functions related to the coordination of the Internet Protocol (IP) address space;

(iii) perform and oversee functions related to the coordination of the Internet domain name system, including the development of policies for determining the circumstances under which new top-level domains are added to the DNS root system;

(iv) oversee operation of the authoritative Internet DNS root server system; and

(v) engage in any other related lawful activity in furtherance of Items (i) through (iv).

IV. MUTUAL INTEREST OF THE PARTIES

Both DOC and ICANN have a mutual interest in a transition that ensures that future technical management of the DNS adheres to the principles of stability, competition, coordination, and representation as published in the Statement of Policy. ICANN has declared its commitment to these principles in its Bylaws. This Agreement is essential for the DOC to ensure continuity and stability in the performance of technical management of the DNS now performed by, or on behalf of, the U.S. Government. Together, the Parties will collaborate on the DNS Project to achieve the transition without disruption.

V. RESPONSIBILITIES OF THE PARTIES

A. General.

1. The Parties agree to jointly participate in the DNS Project for the design, development, and testing of the mechanisms, methods and procedures that should be in place for the private sector to manage the functions delineated in the Statement of Policy in a transparent, non-arbitrary, and reasonable manner.

2. The Parties agree that the mechanisms, methods, and procedures developed under the DNS Project will ensure that private-sector technical management of the DNS shall not apply standards, policies, procedures or practices inequitably or single out any particular party for disparate treatment unless justified by substantial and reasonable cause and will ensure sufficient appeal procedures for adversely affected members of the Internet community.

3. Before the termination of this Agreement, the Parties will collaborate on a DNS Project Report that will document ICANN's test of the policies and procedures designed and developed pursuant to this Agreement.

4. The Parties agree to execute the following responsibilities in accordance with the Principles and Purpose of this Agreement as set forth in section II.

B. DOC. The DOC agrees to perform the following activities and provide the following resources in support of the DNS Project:

1. Provide expertise and advice on existing DNS management functions.

2. Provide expertise and advice on methods and administrative procedures for conducting open, public proceedings concerning policies and procedures that address the technical management of the DNS.

3. Identify with ICANN the necessary software, databases, know-how, other equipment, and intellectual property necessary to design, develop, and test methods and procedures of the DNS Project.
4. Participate, as necessary, in the design, development, and testing of the methods and procedures of the DNS Project to ensure continuity including coordination between ICANN and Network Solutions, Inc.
5. Collaborate on a study on the design, development, and testing of a process for making the management of the root server system more robust and secure. This aspect of the DNS Project will address:
 - a. Operational requirements of root name servers, including host hardware capacities, operating system and name server software versions, network connectivity, and physical environment.
 - b. Examination of the security aspects of the root name server system and review of the number, location, and distribution of root name servers considering the total system performance, robustness, and reliability.
 - c. Development of operational procedures for the root server system, including formalization of contractual relationships under which root servers throughout the world are operated.
6. Consult with the international community on aspects of the DNS Project.
7. Provide general oversight of activities conducted pursuant to this Agreement.
8. Maintain oversight of the technical management of DNS functions currently performed either directly, or subject to agreements with the U.S. Government, until such time as further agreement(s) are arranged as necessary, for the private sector to undertake management of specific DNS technical management functions.

C. ICANN. ICANN agrees to perform the following activities and provide the following resources in support of the DNS Project and further agrees to undertake the following activities pursuant to its procedures as set forth in Attachment B (Articles of Incorporation) and Attachment C (By-Laws), as they may be revised from time to time in conformity with the DNS Project:

1. Provide expertise and advice on private sector functions related to technical management of the DNS such as the policy and direction of the allocation of IP number blocks and coordination of the assignment of other Internet technical parameters as needed to maintain universal connectivity on the Internet.
2. Collaborate on the design, development and testing of procedures by which members of the Internet community adversely affected by decisions that are in conflict with the bylaws of the organization can seek external review of such decisions by a neutral third party.
3. Collaborate on the design, development, and testing of a plan for introduction of competition in domain name registration services, including:
 - a. Development of procedures to designate third parties to participate in tests conducted pursuant to this Agreement.
 - b. Development of an accreditation procedure for registrars and procedures that subject registrars to consistent requirements designed to promote a stable and robustly competitive DNS, as set forth in the Statement of Policy.
 - c. Identification of the software, databases, know-how, intellectual property, and other equipment necessary to implement the plan for competition;
4. Collaborate on written technical procedures for operation of the primary root server including procedures that permit modifications, additions or deletions to the root zone file.
5. Collaborate on a study and process for making the management of the root server system more robust and secure. This aspect of the Project will address:
 - a. Operational requirements of root name servers, including host hardware capacities, operating system and name server software versions, network connectivity, and physical environment.
 - b. Examination of the security aspects of the root name server system and review of the number, location, and distribution of root name servers considering the total system performance; robustness, and reliability.
 - c. Development of operational procedures for the root system, including formalization of contractual relationships under which root servers throughout the world are operated.
6. Collaborate on the design, development and testing of a process for affected parties to participate in the formulation of policies and procedures that address the technical management of the Internet. This process will include methods for soliciting, evaluating and responding to comments in the adoption of policies and procedures.

7. Collaborate on the development of additional policies and procedures designed to provide information to the public.
8. Collaborate on the design, development, and testing of appropriate membership mechanisms that foster accountability to and representation of the global and functional diversity of the Internet and its users, within the structure of private-sector DNS management organization.
9. Collaborate on the design, development and testing of a plan for creating a process that will consider the possible expansion of the number of gTLDs. The designed process should consider and take into account the following:
 - a. The potential impact of new gTLDs on the Internet root server system and Internet stability.
 - b. The creation and implementation of minimum criteria for new and existing gTLD registries.
 - c. Potential consumer benefits/costs associated with establishing a competitive environment for gTLD registries.
 - d. Recommendations regarding trademark/domain name policies set forth in the Statement of Policy; recommendations made by the World Intellectual Property Organization (WIPO) concerning: (i) the development of a uniform approach to resolving trademark/domain name disputes involving cyberpiracy; (ii) a process for protecting famous trademarks in the generic top level domains; (iii) the effects of adding new gTLDs and related dispute resolution procedures on trademark and intellectual property holders; and recommendations made by other independent organizations concerning trademark/domain name issues.
10. Collaborate on other activities as appropriate to fulfill the purpose of this Agreement, as agreed by the Parties.

D. Prohibitions.

1. ICANN shall not act as a domain name Registry or Registrar or IP Address Registry in competition with entities affected by the plan developed under this Agreement. Nothing, however, in this Agreement is intended to prevent ICANN or the USG from taking reasonable steps that are necessary to protect the operational stability of the Internet in the event of the financial failure of a Registry or Registrar or other emergency.
2. Neither Party, either in the DNS Project or in any act related to the DNS Project, shall act unjustifiably or arbitrarily to injure particular persons or entities or particular categories of persons or entities.
3. Both Parties shall act in a non-arbitrary and reasonable manner with respect to design, development, and testing of the DNS Project and any other activity related to the DNS Project.

VI. EQUITABLE APPORTIONMENT OF COSTS

The costs of this activity are equitably apportioned, and each party shall bear the costs of its own activities under this Agreement. This Agreement contemplates no transfer of funds between the Parties. Each Party's estimated costs for the first six months of this Agreement are attached hereto. The Parties shall review these estimated costs in light of actual expenditures at the completion of the first six month period and will ensure costs will be equitably apportioned.

VII. PERIOD OF AGREEMENT AND MODIFICATION/TERMINATION

This Agreement will become effective when signed by all parties. The Agreement will terminate on September 30, 2000, but may be amended at any time by mutual agreement of the parties. Either party may terminate this Agreement by providing one hundred twenty (120) days written notice to the other party. In the event this Agreement is terminated, each party shall be solely responsible for the payment of any expenses it has incurred. This Agreement is subject to the availability of funds.

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 J. Beckwith Burr
 Associate Administrator, NTIA
 U.S. Department of Commerce
 Washington, D.C. 20230

PARTIES ESTIMATED SIX MONTH COSTS

A. ICANN

Costs to be borne by ICANN over the first six months of this Agreement include: development of Accreditation Guidelines for Registries; review of Technical Specifications for Shared Registries; formation and operation of Government, Root Server, Membership and Independent Review Advisor Committees; advice on formation of and review of applications for recognition by Supporting Organizations; promulgation of conflicts of interest policies; review and adoption of At-Large membership and elections processes and independent review procedures, etc; quarterly regular Board meetings and associated costs (including

open forums, travel, staff support and communications infrastructure); travel, administrative support and infrastructure for additional open forums to be determined; internal executive, technical and administrative costs; legal and other professional services; and related other costs. The estimated six month budget (subject to change and refinement over time) is \$750,000 - 1 million.

B. DOC

Costs to be borne by DOC over the first six months of this Agreement include: maintenance of DNS technical management functions currently performed by, or subject to agreements with, the U.S. Government, expertise and advice on existing DNS management functions; expertise and advice on administrative procedures; examination and review of the security aspects of the Root Server System (including travel and technical expertise); consultations with the international community on aspects of the DNS Project (including travel and communications costs); general oversight of activities conducted pursuant to the Agreement; staff support equal to half-time dedication of 4-5 full time employees, travel, administrative support, communications and related other costs. The estimate six month budget (subject to change and refinement over time) is \$250,000 - \$350,000.

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Page Updated 31-December-99.

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EXHIBIT JZ-30



USC/ICANN Transition Agreement

USC/ICANN TRANSITION AGREEMENT

This USC/ICANN TRANSITION AGREEMENT (this "Agreement") is made and entered into as of the Effective Date (as defined below) by and between the UNIVERSITY OF SOUTHERN CALIFORNIA, a California nonprofit public benefit corporation ("USC"), and the INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS, a California nonprofit public benefit corporation ("ICANN").

RECITALS

- A. The Internet Assigned Numbers Authority ("IANA") coordinates the Internet's address allocation, domain names, and protocol parameter assignment, and plays a central role in the management of the Internet's root server system.
- B. Pursuant to the Teranode Network Technology contract (the "TNT Contract") awarded by the Defense Advanced Research Projects Agency ("DARPA") to the Information Sciences Institute ("ISI") of USC's School of Engineering, USC is operating IANA as a research project.
- C. The National Telecommunications and Information Administration ("NTIA") has authorized IANA to transition from its current status under USC/ISI to a nonprofit corporation. ICANN has been formed as a nonprofit corporation with a board of directors representing the spectrum of Internet interests around the world to assume the functions previously performed by USC's IANA project. The NTIA has accepted a proposal pursuant to which ICANN will assume the IANA functions.
- D. To effect the above referenced transition, the parties desire to enter into this Agreement to provide for USC's transferring to ICANN certain functions, responsibilities, assets, and personnel previously performed by USC as the IANA project, all under and pursuant to the terms of this Agreement and the other documents and instruments referred to herein.

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties hereto, intending to be legally bound, agree as follows:

1. ALLOCATION OF FUNCTIONS AND RESPONSIBILITIES. Effective on the Effective Date, under the authority of NTIA, IANA relinquishes and ICANN assumes the performance of the following functions and responsibilities previously performed by USC as the IANA project under the TNT Contract:

- (a) Establishment, oversight, and implementation of policy for allocation and assignment of IP address blocks, including delegation of assignment responsibilities to regional address registries;
- (b) Establishment, oversight, and implementation of policy for the Internet Domain Name System ("DNS"), including delegation of responsibilities to DNS registries and registrars;
- (c) Assignment of technical protocol parameter numbers and maintenance of assigned values; and
- (d) Oversight of the operation of the Internet root server system.

2. INTELLECTUAL PROPERTY.

2.1 Service Mark and Copyright Assignment. USC hereby assigns and transfers without warranty unto ICANN USC's entire right, title and interest in and to the following:

- (a) the "Internet Assigned Numbers Authority" service mark pending registration, the "Internet Assigned Numbers Authority" common law service mark, the "IANA" service mark pending registration, the "IANA" common law service mark, and the common law service mark in the IANA logo shown in Exhibit "A" attached hereto (collectively, the "Service Marks"), and the goodwill associated with the Service Marks; and
- (b) the copyright to, and all other exclusive rights to reproduce, distribute, prepare derivative works based on, display, and otherwise use, the IANA logo shown in Exhibit "A" attached hereto, pursuant to the terms and conditions of that certain Service Mark and Copyright Assignment attached hereto as Exhibit "B" (the "Service Mark and Copyright Assignment").

2.2 Intellectual Property License. Subject to the following terms, USC hereby grants ICANN a personal, indivisible and non-transferrable, non-exclusive license and consent without warranty to use the following:

- (a) all intellectual property rights (including without limitation all patents, copyrights, trademarks, service marks, and trade secret rights) in those computer programs, data, documents, protocols, processes and other materials specified in Exhibit "C" attached hereto; and
- (b) all intellectual property rights in all computer programs, data, documents, protocols, processes, and other materials created or

received in IANA's operations on or after the Effective Date (collectively, the "Licensed IP Rights").

2.3 Disclaimer. Subject to the assignments and transfers made in Section 2.1 and the licenses and consents conveyed in Section 2.2, ICANN disclaims in favor of USC all right, title, and interest in all patents, copyrights, trademarks, service marks, trade secrets and other intellectual property rights utilized by IANA in its operations prior to the Effective Date.

2.4 Execution of Documents. USC will promptly execute such documents reflecting the assignments and transfers of intellectual property rights set forth in Section 2.1 as ICANN may reasonably request.

2.5 Use of Licensed IP Rights.

(a) ICANN shall use the Licensed IP Rights solely in connection with ICANN's operations as formerly provided by IANA (the "Licensed Services"). ICANN shall not use the Licensed IP Rights in connection with any other service or material unless ICANN first, at its own cost and expense, (i) provides USC with a detailed description of the proposed services to be offered or materials to be distributed in connection with the Licensed IP Rights and (ii) receives USC's written consent to such proposed use of the Licensed IP Rights.

(b) ICANN shall not alter, modify, adapt, translate, rent, sublicense, assign, loan, distribute, or create derivative works based upon the Licensed IP Rights without the prior written consent of USC.

(c) ICANN acknowledges that USC is the owner of the Licensed IP Rights and ICANN agrees that it will do nothing inconsistent with such ownership and that use of the Licensed IP Rights by ICANN shall inure to the benefit of USC.

(d) ICANN shall promptly notify USC of any known use of Licensed IP Rights by others not duly authorized. Notification of such infringement shall include all details known by ICANN that would enable USC to investigate such infringement. Nothing in this Agreement shall require USC to bring suit for the infringement of any of the Licensed IP Rights. ICANN shall have no right to initiate an action of its own against an alleged infringer without first obtaining the prior express written approval of USC.

(e) ICANN agrees to fully cooperate with USC, at the expense of USC, in prosecution of any action against an infringer. In the event that USC should attempt to pursue any infringer and obtains a recovery from said infringer, whether by adjudication or settlement, USC shall be entitled to retain the entirety of any such recovery to the exclusion of ICANN.

2.6 Optional Acquisition of Licensed IP Rights. ICANN shall have the option to acquire USC's entire right, title and interest in and to the Licensed IP Rights upon (a) receiving written approval of such acquisition in form and substance

acceptable to USC from the United States government and (b) licensing back to USC all such Licensed IP Rights on the basis of a fully paid up, nonexclusive license in perpetuity to use such Licensed IP Rights on the same terms under which those Licensed IP Rights are licensed to ICANN hereunder; provided that USC may use such Licensed IP Rights for any purpose whatsoever and shall not be obligated under the terms of Section 2.5(a) hereof.

2.7 Confidentiality. To the extent USC has agreed, prior to the Effective Date, to keep confidential materials submitted by third parties to IANA, ICANN hereby undertakes to maintain such confidentiality. This undertaking by ICANN is made for the benefit of USC only, and not for the benefit of such third parties.

3. EXPENSES. ICANN will pay all of its expenses, including expenses of incorporation, federal and state tax exemption filings, transacting business qualification as necessary and other corporate and tax filings. USC shall be responsible for all IANA-related operating expenses through the Effective Date and ICANN shall be responsible for all subsequent IANA-related operating expenses. ICANN does not assume the liabilities of IANA incurred prior to the Effective Date.

4. COMPUTER FACILITY ACCESS. USC will provide ICANN with access to its computer facility and other resources for a period of two (2) years after the Effective Date in consideration of ICANN's reimbursement of ICANN's proportional share of USC's fully loaded costs for such facility and resources. Thereafter, the period of such access shall extend automatically for successive renewal periods of one year each unless either party delivers written notice to the other party at least one hundred eighty (180) days prior to the last day of the then current renewal period of its election not to renew such right of access. ICANN's access to such facilities shall be undertaken (a) in such manner and times as shall not disrupt ISI's access to and use thereof and (b) pursuant to the confidentiality commitment of ICANN provided for in Section 4.2 below.

4.1 Payment. USC's current rates for access to its facility and resources as provided for in this Section 4 are set forth on Exhibit "D" attached hereto. ICANN shall pay USC for such access charges, as they may be changed from time to time upon notice from USC, no later than thirty (30) days following ICANN's receipt of USC's invoice therefor. All payments made under this Section 4 shall be paid in US dollars by check drawn on a US bank, and checks shall be made payable to the "University of Southern California."

4.2 Confidentiality. ICANN acknowledges that it may obtain access to certain nonpublic information as a result of its access to USC's computer facility under this Section 4 (the "Confidential Information"). ICANN hereby agrees not to disclose, use, reproduce or otherwise disseminate any such Confidential Information to any person, firm or corporation and to take such actions as may be reasonably required to prevent any such disclosure, use, reproduction or dissemination by any of ICANN's employees, contractors, officers or directors; provided, however, that ICANN's obligations under this Section 4.2 shall not apply to any such information to the extent:

(a) it can be established and documented that such information was rightfully in the possession of, or rightfully known by, ICANN at the

time of execution of this Agreement other than through ICANN personnel previously or currently employed by USC;

(b) such information is obtainable by ICANN from other sources having the legal right to disclose the same;

(c) such information is generally available to the public without a breach of this Agreement; or

(d) as may be required by court order or any governmental agency; provided that ICANN shall notify USC of any such court order or governmental agency requirement promptly after receipt and shall cooperate with USC in seeking a protective order or other remedy to protect the confidential nature of the Confidential Information sought in such order or requirement.

5. ADDITIONAL DOCUMENTS

5.1 Deliveries by ICANN. On or before the Effective Date, ICANN shall deliver to USC certificates of insurance evidencing the insurance coverages required by Section 7.4 hereof.

5.2 Deliveries by USC. On or before the Effective Date, USC shall deliver to ICANN the Service Mark and Copyright Assignment.

5.3 Board Approval. This Agreement requires approval or ratification of the ICANN Board of Directors. ICANN shall use its best efforts to secure and deliver to USC such approval or ratification within one hundred eighty (180) days after the Effective Date.

5.4 Governmental Approval. "Governmental Approval" shall mean the receipt by either party of written approval of the transfer of functions and responsibilities contemplated in Section 1 of this Agreement, in form and substance satisfactory to both parties hereto, from the United States government.

5.5 Effective Date. Irrespective of the dates the approval or ratification required under Section 5.3 above occurs, USC and ICANN acknowledge and agree that the effective date and time of each of this Agreement and the Service Mark and Copyright Assignment (the "Effective Date"), shall be the later of (i) January 1, 1999 at 12:01 a.m. and (ii) the date upon which Governmental Approval is received.

6. REPRESENTATIONS AND OTHER COVENANTS

6.1 USC Representations. USC hereby represents and warrants to ICANN as follows:

(a) USC has full corporate power and authority to enter into the transactions contemplated by this Agreement; and

(b) This Agreement and the other documents and instruments contemplated hereby have been duly authorized and are legally binding upon and enforceable against USC in accordance with their

respective terms, subject only to bankruptcy, reorganization, insolvency and other laws for the protection of debtors and to general principles of equity.

6.2 ICANN Representations. ICANN hereby represents and warrants to USC as follows:

- (a) ICANN has filed the articles of incorporation attached hereto as Exhibit "E";
- (b) ICANN has adopted the Bylaws attached hereto as Exhibit "F";
- (c) A preliminary ICANN operating budget has been prepared, and ICANN has funds, funding commitments and reasonably projected funding sources sufficient to ensure ICANN's operations through June 30, 1999, based on the status of contributions to ICANN and other revenues and capital contribution received or committed, as listed on the Financial Report attached hereto as Exhibit "G";
- (d) There are no suits, actions or other proceedings pending or, to ICANN's knowledge, threatened before any court or governmental agency seeking to restrain or prohibit or to obtain damages or other relief in connection with this Agreement or the consummation of the transactions contemplated hereby, and to ICANN's knowledge there is no investigation underway that might eventuate in any such suit, action or proceeding;
- (e) This Agreement and the other documents and instruments contemplated hereby have been duly authorized and are legally binding upon and enforceable against ICANN in accordance with their respective terms, subject only to bankruptcy, reorganization, insolvency and other laws for the protection of debtors and to general principles of equity; and
- (f) ICANN has acquired all necessary approvals or consents of any third parties whose consent may be required in connection with the transactions contemplated by this Agreement.

6.3 Publicity. Promptly after the date of execution of this Agreement, USC and ICANN shall issue a joint press release, substantially in the form and substance attached hereto as Exhibit "H", concerning the transactions contemplated by this Agreement. Thereafter, USC and ICANN shall coordinate any public statements concerning the transactions contemplated by this Agreement.

6.4 Consents and Notifications. USC shall cooperate with ICANN in any reasonable manner in securing approvals and consents of any third parties whose consent may be required in connection with the transactions contemplated by this Agreement. Promptly after the date of execution of this Agreement, ICANN shall notify all such third parties to whom notice is required in connection with the transactions contemplated by this Agreement.

6.5 Fees and Expenses. USC and ICANN shall bear their respective expenses

incurred in connection with the transactions contemplated by this Agreement, including without limitation the preparation, execution and performance of this Agreement, and all fees and expenses of counsel, accountants and other representatives or agents.

6.6 Additional Agreements; Cooperation. Subject to the terms and conditions herein provided, USC and ICANN agree to use their respective best efforts to take, or cause to be taken, all actions and to do, or cause to be done, all things necessary, proper or advisable to consummate and make effective as promptly as practicable the transactions contemplated by this Agreement, and to cooperate with each other in connection with the foregoing.

7. RELEASES AND INDEMNIFICATION

7.1 Indemnification by ICANN. ICANN shall indemnify and hold USC harmless from and against any and all loss, damage, deficiency, cost, expense, liability or judgment incurred or suffered by USC, including without limitation interest, penalties and reasonable attorneys' fees, from or arising out of:

- (a) The failure by ICANN to pay, perform or otherwise discharge any of its obligations or liabilities arising under this Agreement or any other document or instrument provided for in this Agreement;
- (b) Any breach by ICANN of any representation, warranty, covenant, agreement or other obligation of ICANN contained in this Agreement or any of the documents or instruments provided for herein;
- (c) All claims arising out of ICANN's operations after the Effective Date;
- (d) All claims arising out of the use of any rights transferred or licensed to ICANN by USC; or
- (e) Any claims arising out of the actions of USC's personnel while under the supervision and direction of ICANN.

7.2 Indemnification by USC. USC shall indemnify and hold ICANN harmless from and against any and all loss, damage, deficiency, cost, expense, liability or judgment incurred or suffered by ICANN, including without limitation interest, penalties and reasonable attorneys' fees, from or arising out of:

- (a) The failure by USC to pay, perform or otherwise discharge any of its obligations or liabilities arising under this Agreement or any other document or instrument provided for in this Agreement; or
- (b) Any breach by USC of any representation, warranty, covenant, agreement or other obligation of USC contained in this Agreement or any of the documents or instruments provided for herein.

7.3 Procedure. Each party entitled to indemnification pursuant to Sections 7.1 and 7.2 (the "Indemnified Party") shall give prompt written notice to the other party hereto (the "Indemnifying Party") in the event it obtains knowledge of any claim or event which could give rise to a claim by the Indemnified Party against

the Indemnifying Party pursuant to such indemnity, stating the nature and basis of such claim or event and the amount thereof, and the Indemnifying Party shall have the obligation to defend against each such claim, provided, however, that the failure to so notify shall not relieve the Indemnifying Party of its responsibilities hereunder except to the extent the Indemnifying Party has been prejudiced in a material respect. During the course of any third-party claim or proceeding defended against by the Indemnifying Party, the Indemnifying Party shall keep the Indemnified Party fully informed with regard to such claim or proceeding, use all reasonable efforts to defend such claim or proceeding and present any reasonable defense and employ any reasonable tactic suggested by the Indemnified Party, its counsel or its accounts. The Indemnified Party shall have the right to be represented at any such claim or proceeding by legal counsel and accountants of its choosing. The Indemnifying Party shall have the right at any time, without the consent of the Indemnified Party, to settle or compromise any claim or proceeding by any third party, provided, however, that no settlement or compromise which would have any effect upon the assets, operations, reputation or goodwill of the Indemnified Party shall be made without the prior written consent of the Indemnified Party. The Indemnifying Party and the Indemnified Party agree to use their respective best efforts to cooperate with each other in connection with the defense of any claim or proceeding contemplated by this Section.

7.4 Insurance. ICANN shall, throughout the term of this Agreement, obtain and maintain at its own cost and expense from a Best's rated A, class 10 or better insurance company and which is licensed to do business in the state of California, liability insurance, including general comprehensive liability, property, professional liability and directors and officers liability in amounts satisfactory to USC. ICANN shall name USC as an additional insured under its policies of general and professional liability insurance for so long as ICANN utilizes any facilities furnished by, or any rights licensed from, USC and shall preclude termination of coverage without thirty (30) days' prior written notice to USC. ICANN shall from time to time upon request of USC furnish USC with certificates of insurance evidencing such insurance.

8. TERMINATION

8.1 Termination

(a) This Agreement may be terminated at any time as follows:

- (i) By mutual agreement in writing of both parties hereto;
- (ii) By USC, if ICANN shall fail, neglect or refuse to fulfill its obligations under Section 4.1 hereof or under Section 2 of the USC/ICANN Loanout Agreement for a period of ten (10) or more days after receipt of notice thereof; or
- (iii) By USC, if ICANN shall fail, neglect or refuse to fulfill any of its obligations to USC under any other provision of this Agreement or the USC/ICANN Loanout Agreement for a period of thirty (30) or more days after receipt of notice thereof.

(b) Either party may terminate the parties' obligations under Section 4 hereof except for those obligations set forth in Section 4.2 hereof upon one hundred eighty (180) days' prior written notice to the other party.

8.2 Effect of Termination. The termination of this Agreement shall have the following consequences:

(a) If the Agreement fails to receive the requisite approval or ratification required in Section 5.3 above within one hundred eighty (180) days after the Effective Date,

(i) All documents and instruments delivered pursuant to this Agreement shall be returned to the party which executed and delivered the document or instrument, and shall have no further force or effect; and

(ii) This Agreement shall become void and have no effect, with no liability on the part of either party or its officers, directors, members, agents or employees in respect thereof, except for Sections 2.7, 4.2 and 7 hereof, which shall fully survive any termination of this Agreement.

(b) If the Agreement is terminated for any reason under Section 8.1 (a), the parties shall have no further obligations hereunder after the effective date of termination, other than under Sections 2.7, 4.2 and 7 hereof; provided that such termination shall have no effect upon the obligations of either party accrued as of the effective date of termination.

9. MISCELLANEOUS

9.1 Severability. If any term or provision of this Agreement is for any reason held to be invalid, such invalidity shall not affect any other term or provision, and this Agreement shall be interpreted as if such term or provision had never been contained in this Agreement.

9.2 Waiver. No waiver of any of the terms of this Agreement shall be valid unless in writing and signed by both parties. Failure by either party to enforce any rights under this Agreement shall not be construed as a waiver of such rights, and a waiver by either party of a default in one or more instances shall not be construed as a continuing waiver or as a waiver in other instances.

9.3 Assignment. ICANN shall not directly or indirectly assign, transfer, convey or encumber any of its rights under this Agreement without the prior written consent of USC, which shall not be unreasonably withheld if ICANN assigns any of its rights under this Agreement to another non-profit corporation organized for the same or similar purposes as ICANN and performing the same functions as ICANN. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of the respective successors and assigns of USC and ICANN. USC shall have the absolute, unfettered right to transfer this Agreement and its rights and obligations hereunder to any third party upon notice to ICANN.

9.4 Governing Law. This Agreement shall be construed in accordance with and all disputes hereunder shall be governed by the laws of the State of California.

9.5 Controversy. All controversies, claims and disputes arising in connection with this Agreement shall be settled by mutual consultation between the parties in good faith as promptly as possible, but failing an amicable settlement shall be settled finally by arbitration in accordance with the provisions of this Section. Such arbitration shall be conducted in Los Angeles, California, in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA").

(a) Exclusivity. The parties hereto hereby agree that the arbitration procedure provided for herein shall be the sole and exclusive method of resolving any and all of the aforesaid controversies, claims or disputes.

(b) Decision by Arbitrator. The parties shall each submit a list of ten (10) proposed arbitrators to the other party hereto within thirty (30) days after receipt of notice of arbitration of any dispute hereunder. Thereafter the parties shall have an additional thirty (30) days in which to agree upon a single arbitrator to conduct the arbitration, taken from the lists so submitted. If the selected arbitrator is otherwise unavailable or if the parties cannot agree upon an arbitrator, one will be selected by the AAA. The arbitrator so selected shall make a final decision and award according to the terms and provisions of this Agreement and applicable law. Said decision shall set forth findings of fact and conclusions of law upon which the award is based. The arbitrator may select counsel to provide advice in preparation of such findings and conclusions, and on any point of law arising in the course of arbitration. Judgment upon the award may be entered in any court which has jurisdiction over such matter in accordance with the provisions of Section 9.4 hereof.

(c) Costs and Expenses. The costs and expenses of the arbitration, including without limitation attorneys' fees, shall be borne by the parties in the manner determined by the arbitrator.

(d) Judicial Action. Legal action for (i) entry of judgment upon any arbitration award or (ii) adjudication of any controversy, claim or dispute arising from a breach or alleged breach of Sections 9.5(a), (b) or (c) hereof may be heard or tried only in the courts of the State of California for the County of Los Angeles or the Federal District Court for the Central District of California. Each of the parties hereto hereby waives any defense of lack of in personam jurisdiction of said courts and agrees that service of process in such action may be made upon each of them by mailing it certified or registered mail to the other party at the address provided for in Section 9.7 hereof. Both parties hereby submit to the jurisdiction of the court so designated, to the exclusion of any other courts which might have had jurisdiction apart from this Section 9.5, and agree that the prevailing party shall be entitled to recover from the non-prevailing party reasonable expenses, including without limitation attorney's fees.

9.6 Headings. The headings herein are for reference purposes only and shall not constitute a part hereof or be deemed to limit or expand the scope of any provision of this Agreement.

9.7 Notice. All notices to be given under this Agreement (which shall be in writing) shall be given at the respective addresses of the parties as set forth above their respective signatures to this Agreement, unless notification of a change of address is given in writing. Any notice required by this Agreement shall be deemed to have been properly received when delivered in person or when mailed by registered or certified first class mail, return receipt requested, or by Federal Express to the address as given herein, or such addresses as may be designated from time to time during this term of this Agreement.

9.8 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

9.9 Entire Agreement. This Agreement fully supersedes any and all prior agreements or understandings between the parties hereto or any of their respective affiliates with respect to the subject matter hereof, and no change in, modification of or addition, amendment or supplement to this Agreement shall be valid unless set forth in writing and signed and dated by both parties hereto subsequent to the execution of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in duplicate by their duly authorized representatives and to become effective as of the Effective Date.

UNIVERSITY OF SOUTHERN
CALIFORNIA

University Park
Los Angeles, California 90089-1333

INTERNET CORPORATION FOR
ASSIGNED NAMES AND
NUMBERS

P.O. Box 12607
4676 Admiralty Way
Marina Del Rey, California 90292

By:

Name: Dennis F. Dougherty
Title: Senior Vice President
Administration

By:

Name: Michael R. Roberts
Title: Chief Executive Officer

Comments concerning the layout, construction and functionality of this site
should be sent to webmaster@icann.org.

Page Updated 14-May-00

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EXHIBIT JZ-31



Esther Dyson's Response to Ralph Nader's Questions

15 June 1999

Esther Dyson's Response to Ralph Nader's Questions

June 15, 1999

Ralph Nader

P.O. Box 19312

Washington, DC 20036

James Love

Consumer Project on Technology

P.O. Box 19367, Washington, DC 20036

love@cptech.org

<http://www.cptech.org>

Dear Ralph and Jamie:

Thank you both for your letter of June 11. The questions you ask are legitimate, and we have legitimate answers to them. What is illegitimate is the motivation of some of the people who keep asking the same questions without paying attention to the answers.

I hope that my answers below will respond to your concerns. Indeed, I hope that they may persuade you to join us in our fight to remove monopoly from the business of registering domain names and help keep the Net free for small businesses and individuals to use as they see fit. As a longtime champion of individual rights and against monopolies, you hold common cause with us.

Accordingly, I'd like to start by setting some context before answering your specific questions. My response is intended not as an attack against anyone, but as a defense against attacks which are hindering us at ICANN from doing the tasks for which we were created.

As it happens, I'll be in Washington today (Tuesday), and I'd be happy to meet with either or both of you. Please let me know by e-mail or by calling my office at (212) 924-8800. You can also reach me later this afternoon at (202) 979-3863.

Scene-setting

I'd like to set the scene for the answers to your questions by noting that ICANN

is a newly minted organization with many of its organizational processes still under way. It was created primarily in response to the Internet's extraordinary growth, which required a transition from informal management of its technical infrastructure, to something more formal and predictable, and subject to public (but not directly government) oversight.

The Initial Board is following the guidelines set forth in the United States Government's policy paper of last June (the White Paper), as further amplified by the Memorandum of Understanding/Joint Project Agreement ICANN signed with the Department of Commerce in November. These documents comprise an agenda both important and ambitious, and we are doing our best to work our way through it with the help of public input, several formal advisory committees, and the so-called Supporting Organizations that make up ICANN's internal structure. We welcome your input, both now and in the future.

The White Paper articulates no Internet governance role for ICANN, and the Initial Board shares that (negative) view. Therefore, ICANN does not "aspire to address" any Internet governance issues; in effect, it governs the plumbing, not the people. It has a very limited mandate to administer certain (largely technical) aspects of the Internet infrastructure in general and the Domain Name System in particular.

One important aspect of its mandate is the introduction of competition into the business of registering domain names, under an agreement with the US Government. In this particular task, naturally enough, it is meeting fierce resistance from the private government contractor that has been the monopoly provider of DNS services, Network Solutions -- a company that has transformed itself from an unknown start-up at the time (1992) when it first entered into a contract with the National Science Foundation, into a subsidiary of a large privately-owned government contractor today, with a market value of over \$2 billion for its own publicly traded stock [NSOL]. Given this history, and the wealth that has been created through its administration of those government contracts, NSI is in no hurry to see that monopoly eroded. Since this very goal is a principal short-run objective of ICANN, NSI has apparently concluded that its interests are not consistent with ICANN's success. Thus it has been funding and otherwise encouraging a variety of individuals and entities to throw sand in the gears whenever possible, from as many directions as possible.

Of course, "I want to protect my monopoly" is hardly an attractive slogan, and so NSI uses the language of democracy instead. In addition, it encourages and supports others who have a variety of reasons -- economic, philosophical or political -- to be unhappy with the way the community consensus has formed. Of course, many of these people are sincere in their concerns about the transparency of ICANN's operations and their interest in fostering public debate about its activities - as you are. But ICANN's goals and its actions are in fact the result of public debate and consensus - though not of unanimity.

NSI's rhetoric is also quite inconsistent with its conduct. The company operates under the cloak of nondisclosure agreements covering not just technical and commercial information, but also the experiences of the ICANN-accredited registrars now attempting to open up the domain-name registration business to

competition. Furthermore, Network Solutions claims "proprietary" rights in databases and techniques developed under government contract as a reason for refusing to release information and for expensive license fees. The nondisclosure agreements it imposes on competing registrars are so onerous that many who wish to participate in ICANN's competition initiative cannot do so without permanently restricting their ability to compete in this space in the future.

Forgive this lengthy preamble, but I wanted you to understand the origin of many of the complaints you have been hearing - basically, the effective PR of a monopolist seeking to postpone the inevitable arrival of competition fostered by ICANN. Since you have not been actively involved in this project over the several years it has been underway, you may not appreciate the power struggles involved...but given your long history of fighting monopoly power, I thought it was important to provide you with some background.

Now of course, there are many participants in this debate who are not NSI agents, and who have honestly differing views about particular issues. Since ICANN is a consensus, non-governmental body, we are charged to listen to all such views and debate them, and eventually we reach a consensus position. As a non-elected initial board, we take this duty very seriously; our method is to foster and then recognize consensus rather than force it. This has certainly been the case to date: Every policy developed in ICANN has been the product of a comprehensive notice and comment process, and every effort has been made to reflect in ICANN policies the consensus position to the extent we can determine it. Of course, consensus is not unanimity, and there are people of good faith who disagree with certain specific ICANN policies. We try hard to explain the reasons and trade-offs for each decision. In the end, we realize we can achieve legitimacy only if a substantial number of those affected agree that we are making the right compromises most of the time. (I myself do not agree with every facet of every ICANN decision, which is why ICANN has a board and not just a chairman!)

With this background, let me try to respond to your specific questions.

IP issues

On the intellectual property issues, in its White Paper the Department of Commerce requested the World Intellectual Property Organization to conduct a study for submission to ICANN concerning how to operate the domain name system so as to minimize conflicts with trademark laws throughout the world. These issues include the need for and scope of alternative dispute resolution mechanisms that could work despite the varying legal regimes that control the use and protection of trademarks and similar intellectual property on the global Internet; the desirability of special rules for so-called "famous names;" and the intellectual property issues raised by the possible addition of new Top-Level Domains (beyond .com, .net and .org). WIPO led a 10-month study, held 15 public meetings with more than 1300 participants, and ultimately produced a set of recommendations that it transmitted to ICANN this April.

At its meeting in Berlin in May, ICANN considered the WIPO report and recommendations, and the many public comments (both online and in-person)

about them. Ultimately, the Board endorsed WIPO's call for consistent administrative dispute resolution procedures in principle, and referred that recommendation to its newly formed constituent unit, the Domain Name Supporting Organization, for its review and specific implementation recommendations. It also referred most of the rest of the report to the DNSO for further study, without endorsing a particular direction. (And it noted that it had already implemented some administrative recommendations, concerning prepayment and contact information, in its standard registrar contract.)

The DNSO's input will also be fully subject to the ICANN notice and comment procedures before ICANN's next full-scale meeting in August, where the board will once again consider them in the light of public comments and look for consensus before deciding whether and how they should be implemented (or modified).

The root server system

On the root server system, the White Paper called for improvements in the system and ICANN has formed a committee of experts to look into that complex subject. The committee has provided reports on its work at each of the last two public meetings, and has ensured that the system does not face Y2K vulnerabilities. At this moment, ICANN does not control the root servers, although it expects to do so by the end of the transition period. In the meantime, ICANN is continuing to administer TLD assignments and related root server policies in the same manner as they were managed by Dr. Jon Postel before ICANN was formed. Any policies relating to the root servers under ICANN oversight will, of course, be subject to the standard notice, comment and consensus procedures that precede any ICANN decision that could significantly affect the Internet.

Review and recourse

ICANN is a private organization; its actions are fully subject to legal review and oversight. Thus, if any action is believed to impair some legal right, a complainant would have full recourse to any relevant court. In addition, ICANN has a fully developed reconsideration procedure, and is in the process of establishing an Independent Review entity to evaluate any claim that ICANN has acted inconsistently with its Articles or Bylaws.

Financial issues

The White Paper assumed that, since the private non-profit organization it called for (now ICANN) would not be funded by governments, it would have to be funded by the beneficiaries of its technical and policy development activities. Since it is still very early in ICANN's existence, and we have no experience to determine the level of resources necessary to carry out its duties, ICANN has (again, after a full process of notice and comment) established a fee not to exceed \$1 annually per name registration which fee would be paid by the business entities actually making the registration. (You asked by what authority we will charge the fees; we will do so in accordance with a contract that we will execute with each registrar - a group that we still hope will soon include NSI.)

Since ICANN seeks only to recover its costs, we believe the \$1 fee will be adjusted downward as the early organizational expenses are gradually reduced and as the number of names registered increases. In addition, if ICANN succeeds in fostering competition in the registration process, it is likely that the overall consumer price of registrations will come down dramatically. Currently, it is set unilaterally by NSI at \$70 for a two-year registration (NSI does not permit one-year registrations). A competition-spurred reduction would lead to a substantial net consumer benefit due to ICANN's activities.

Finally, ICANN's activities are strictly limited by its Articles and Bylaws, and any fees it collects can be used only to offset the costs of these specific activities. Since ICANN is intended to be a 501(c)(3) tax-exempt organization, it is also limited by IRS regulations in any expenditure of funds aimed at influencing legislation. If you would like additional details on the expenses we foresee for the fiscal year beginning July 1 (just under \$6 million), you can find a comprehensive budget document posted at our Website for public viewing.

The role of the Initial/Interim Board

Finally, I would like to consider your question whether ICANN's "interim" Board is making policy decisions it should not be making. First of all, on semantics: NSI has promoted the notion that ICANN somehow has violated the White Paper by having an "initial" Board rather than an "interim" Board. This argument is pointless. The White Paper calls for the consensus entity that became ICANN to "appoint, on an interim basis, an initial Board of Directors (an Interim Board)" (emphasis in original). This "initial" Board was to serve until it established "a system of electing a Board of Directors." Thus, the terms "initial" and "interim" were clearly synonymous in the White Paper.

More importantly, the White Paper made it absolutely clear that the Board (whatever it was called) should deal with a variety of substantive policy issues in addition to establishing the procedures and structures necessary to create an elected Board going forward. The White Paper specifically called on the "initial" Board to formulate the necessary consensus policies to allow competition to be introduced as quickly as possible. These policies included "qualifications for domain name registries and domain name registrars" and "policies for the addition of TLDs." Finally, in the White Paper, the United States government said it would ask WIPO to "develop a set of recommendations for trademark/ domain name dispute resolutions and other issues to be presented to the Interim Board for its consideration."

The current Board, which I assure you would very much like keep its tenure as short as possible consistent with doing its duty, has undertaken no policy initiatives not expressly contemplated in the White Paper, or for which there was not some urgency of action necessary to meet the principal objectives of the White Paper and of ICANN itself.

Having said all this, I would like to mention that we have made significant progress toward a fully elected Board. The first of the three Supporting Organizations responsible for electing nine of the 19 Board members is now in existence (the DNSO), and we expect it to provide its three Directors soon. The

other two SO's are currently organizing themselves, and we hope that they will provide their three Directors each by early next year. ICANN's Membership Advisory Committee has presented recommendations to the ICANN Board dealing with the establishment of the At Large membership that will elect nine Directors, and the ICANN staff and counsel are currently figuring out how to implement them. This latter effort has proven complicated, since it is critical that the membership and election process that will produce fully half of the Board be fair, open, resistant to fraud or capture, and as widely inclusive of the full range of users and others affected by ICANN policies as possible.

Conclusion

Thus, we have made much progress on many fronts, thanks largely to enormous volunteer contributions of many, many people, from Directors (who are not compensated other than out-of-pocket expenses and cannot be elected to the Board for two years following their current service) to hundreds of individuals and entities that want this unique process to work. Our work has, however, been made much more difficult by the direct and indirect opposition of NSI, the primary entity that stands to gain from such delay. I suppose this is an understandable approach for a monopolist threatened by new competition, but it is still disappointing, to me and to the Internet community as a whole.

It would have been much simpler, and a lot more pleasant, to have seen NSI work with the rest of the community to make this obviously necessary transition to open competition and policy-based management of the Internet's vital technical infrastructure. Still, we will persevere, and we will succeed. I hope this is responsive to your questions. Perhaps you could help us to generate even more momentum behind the forces of Internet competition and move away from monopoly as quickly as possible. We would greatly appreciate your assistance in this effort. If you have further questions, please call on me, our Interim President Mike Roberts, or our Chief Counsel Joe Sims. We would be glad to try to answer them at your convenience and to gain your understanding and support.

Yours truly,

Esther Dyson

Interim Chairman, Internet Corporation for Assigned Names and Numbers
(ICANN)

Link to Questions posed by Mr. Nader and Mr. Love
<http://www.icann.org/correspondence/nader-to-dyson-11jun99.htm>

Comments concerning the layout, construction and functionality of this site
should be sent to webmaster@icann.org.

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EXHIBIT JZ-32



ICANN-NSI Registry Agreement

(Approved November 4, 1999)

(Signed November 10, 1999)

(Posted November 10, 1999)

On September 28, 1999, ICANN [announced](#) tentative agreement with the United States Department of Commerce and Network Solutions, Inc. on a series of agreements that will put the newly introduced competition among registrars in the .com, .net, and .org TLDs on a permanent and firmer footing. After written and oral public comments, these agreements were revised in several respects and were [adopted](#) by the ICANN Board on November 4, 1999.

One of these agreements is a registry agreement under which NSI will operate the registry for the .com, .net, and .org top-level domains according to requirements stated in the agreement and developed in the future through the ICANN consensus-based process. All ICANN-accredited registrars will have equal access to this registry.

The text of the registry agreement appears below.

REGISTRY AGREEMENT

This REGISTRY AGREEMENT ("Agreement") is by and between the Internet Corporation for Assigned Names and Numbers, a not-for-profit corporation, and Network Solutions, Inc., a Delaware corporation.

Definitions

For purposes of this Agreement, the following definitions shall apply:

1. A "Consensus Policy" is one adopted by ICANN as follows:

(a) "Consensus Policies" are those adopted based on a consensus among Internet stakeholders represented in the ICANN process, as demonstrated by (1) the adoption of the policy by the ICANN Board of Directors, (2) a recommendation that the policy should be adopted by at least a two-thirds vote of the council of the ICANN Supporting Organization to which the matter is delegated, and (3) a written report and supporting materials

(which must include all substantive submissions to the Supporting Organization relating to the proposal) that (i) documents the extent of agreement and disagreement among impacted groups, (ii) documents the outreach process used to seek to achieve adequate representation of the views of groups that are likely to be impacted, and (iii) documents the nature and intensity of reasoned support and opposition to the proposed policy.

(b) In the event that NSI disputes the presence of such a consensus, it shall seek review of that issue from an Independent Review Panel established under ICANN's bylaws. Such review must be sought within fifteen working days of the publication of the Board's action adopting the policy. The decision of the panel shall be based on the report and supporting materials required by [subsection \(a\) above](#). In the event that NSI seeks review and the Panel sustains the Board's determination that the policy is based on a consensus among Internet stakeholders represented in the ICANN process, then NSI must implement such policy unless it promptly seeks and obtains injunctive relief under [Section 13 below](#).

(c) If, following a decision by the Independent Review Panel convened under [subsection \(b\) above](#), NSI still disputes the presence of such a consensus, it may seek further review of that issue within fifteen working days of publication of the decision in accordance with the dispute resolution procedures set forth in [Section 13 below](#); provided, however, that NSI must continue to implement the policy unless it has obtained injunctive relief under [Section 13 below](#) or a final decision is rendered in accordance with the provisions of [Section 13](#) that relieves NSI of such obligation. The decision in any such further review shall be based on the report and supporting materials required by [subsection \(a\) above](#).

(d) A policy adopted by the ICANN Board of Directors on a temporary basis, without a prior recommendation by the council of an ICANN Supporting Organization, shall also be considered to be a Consensus Policy if adopted by the ICANN Board of Directors by a vote of at least two-thirds of its members, and if immediate temporary adoption of a policy on the subject is necessary to maintain the stability of the Internet or the operation of the domain name system, and if the proposed policy is as narrowly tailored as feasible to achieve those objectives. In adopting any policy under this provision, the ICANN Board of Directors shall state the period of time for which the policy is temporarily adopted and shall immediately refer the matter to the appropriate Supporting Organization for its evaluation and review with a detailed explanation of its reasons for adopting the temporary policy and why the Board believes the policy should receive the consensus support of Internet stakeholders. If the period of time for which the policy is adopted exceeds 45 days, the Board shall reaffirm its temporary adoption every 45 days for a total period not to exceed 180 days, in order to maintain such policy in effect until such time as it meets the standard set forth in [subsection \(a\) above](#). If the standard set forth in [subsection \(a\) above](#) is not met within the temporary period set by the Board, or the council of the Supporting Organization to which it has

been referred votes to reject the temporary policy, it will no longer be a "Consensus Policy."

(e) For all purposes under this Agreement, the policies identified in [Appendix A](#) adopted by the ICANN Board of Directors before the effective date of this Agreement shall be treated in the same manner and have the same effect as "Consensus Policies."

(f) In the event that, at the time the ICANN Board adopts a policy under [subsection \(a\) above](#) during the term of this Agreement, ICANN does not have in place an Independent Review Panel established under ICANN's bylaws, the fifteen working day period allowed under [subsection \(b\) above](#) to seek review shall be extended until fifteen working days after ICANN does have such an Independent Review Panel in place and NSI shall not be obligated to comply with the policy in the interim.

2. The "Effective Date" is the date on which the Agreement is signed by ICANN and NSI.

3. The "Expiration Date" is the date specified in [Section 23 below](#).

4. "gTLDs" means the .com, .net, and .org TLDs, and any new gTLDs established by ICANN.

5. "ICANN" refers to the Internet Corporation for Assigned Names and Numbers, a party to this Agreement.

6. "NSI" refers to Network Solutions, Inc., in its capacity as a domain name registry for the Registry TLDs, a party to this Agreement.

7. "Personal Data" refers to data about any identified or identifiable natural person.

8. "Registry Data" means all data maintained in electronic form in the registry database, and shall include Zone File Data, all data submitted by registrars in electronic form, and all other data concerning particular registrations or nameservers maintained in electronic form in the registry database.

9. "Registry Services" means operation of the registry for the Registry TLDs and shall include receipt of data concerning registrations and nameservers from registrars, provision of status information to registrars, operation of the registry TLD zone servers, and dissemination of TLD zone files.

10. "Registry TLDs" refers to the .com, .net, and .org TLDs.

11. "SLD" refers to a second-level domain in the Internet domain name system.

12. "Term of this Agreement" begins on the Effective Date and runs through the earliest of (a) the Expiration Date, (b) termination of this Agreement under [Section 14](#) or [Section 16\(B\)](#), or (c) termination of this Agreement pursuant to withdrawal of the Department of Commerce's recognition of ICANN under [Section 24](#).

13. "TLD" refers to a top-level domain in the Internet domain name system.

14. "Zone File Data" means all data contained in domain name system zone files for the Registry TLDs as provided to TLD nameservers on the Internet.

Agreements

NSI and ICANN agree as follows:

1. Designation of Registry. ICANN acknowledges and agrees that NSI is and will remain the registry for the Registry TLD(s) throughout the Term of this Agreement.

2. Recognition in Authoritative Root Server System. In the event and to the extent that ICANN is authorized to set policy with regard to an authoritative root server system, it will ensure that (A) the authoritative root will point to the TLD zone servers designated by NSI for the Registry TLDs throughout the Term of this Agreement and (B) any changes to TLD zone server designation submitted to ICANN by NSI will be implemented by ICANN within five business days of submission. In the event that this Agreement is terminated (A) under [Section 14](#) or [16\(B\)](#) by NSI or (B) under [Section 24](#) due to the withdrawal of recognition of ICANN by the United States Department of Commerce, ICANN's obligations concerning TLD zone server designations for the .com, .net, and .org TLDs in the authoritative root server system shall be as stated in a separate agreement between ICANN and the Department of Commerce.

3. General Obligations of NSI.

(A) During the Term of this Agreement:

(i) NSI agrees that it will operate the registry for the Registry TLDs in accordance with this Agreement;

(ii) NSI shall comply, in its operation of the registry, with all Consensus Policies insofar as they:

(a) are adopted by ICANN in compliance with [Section 4 below](#),

(b) relate to one or more of the following: (1) issues for which uniform or coordinated resolution is reasonably necessary to facilitate interoperability, technical reliability and/or stable operation of the Internet or domain-name system, (2) registry policies reasonably necessary to implement Consensus Policies relating to registrars, or (3) resolution of disputes regarding the registration of domain names (as opposed to the use of such domain names), and

(c) do not unreasonably restrain competition.

(B) NSI acknowledges and agrees that upon the earlier of (i) the Expiration Date or (ii) termination of this Agreement by ICANN pursuant to [Section 14](#), it will cease to be the registry for the Registry TLDs, unless prior to the end of the term of this Agreement NSI is chosen as the

Successor Registry in accordance with the provisions of this Agreement.

(C) To the extent that Consensus Policies are adopted in conformance with [Section 4 of this Agreement](#), the measures permissible under [Section 3\(A\)\(ii\)\(b\)](#) shall include, without limitation:

- (i) principles for allocation of SLD names (e.g., first-come/first-served, timely renewal, holding period after expiration);
- (ii) prohibitions on warehousing of or speculation in domain names by registries or registrars;
- (iii) reservation of SLD names that may not be registered initially or that may not be renewed due to reasons reasonably related to (a) avoidance of confusion among or misleading of users, (b) intellectual property, or (c) the technical management of the DNS or the Internet (e.g., "example.com" and single-letter/digit names);
- (iv) the allocation among continuing registrars of the SLD names sponsored in the registry by a registrar losing accreditation; and
- (v) dispute resolution policies that take into account the use of a domain name.

Nothing in this [Section 3](#) shall limit or otherwise affect NSI's obligations as set forth elsewhere in this Agreement.

4. General Obligations of ICANN. With respect to all matters that impact the rights, obligations, or role of NSI, ICANN shall during the Term of this Agreement:

- (A) exercise its responsibilities in an open and transparent manner;
- (B) not unreasonably restrain competition and, to the extent feasible, promote and encourage robust competition;
- (C) not apply standards, policies, procedures or practices arbitrarily, unjustifiably, or inequitably and not single out NSI for disparate treatment unless justified by substantial and reasonable cause; and
- (D) ensure, through its reconsideration and independent review policies, adequate appeal procedures for NSI, to the extent it is adversely affected by ICANN standards, policies, procedures or practices.

5. Protection from Burdens of Compliance With ICANN Policies. ICANN hereby agrees to indemnify and hold harmless NSI, and its directors, officers, employees and agents from and against any and all claims, damages or liabilities arising solely from NSI's compliance as required by this Agreement with an ICANN policy adopted after both parties have entered into this Agreement, except that NSI shall not be indemnified or held harmless hereunder to the extent that the claims, damages or liabilities arise from the particular manner in which NSI has chosen to comply with the

policy. In addition, NSI shall be given a reasonable period after receiving notice of adoption of an ICANN Consensus Policy in which to comply with that policy.

6. NSI Registry-Level Financial Support of ICANN. NSI, in its role as operator of the registry for the Registry TLDs, shall pay the gTLD registry-level fees adopted by ICANN in conformance with [Section 4 of this Agreement](#), provided such fees are reasonably allocated among all gTLD registries that contract with ICANN and provided further that, if NSI's share of the total gTLD registry-level fees are or are budgeted to be in excess of \$250,000 in any given year, any such excess must be expressly approved by gTLD registries accounting, in aggregate, for payment of two-thirds of all gTLD registry-level fees. NSI shall pay such fees in a timely manner throughout the Term of this Agreement, and notwithstanding the pendency of any dispute between NSI and ICANN. NSI agrees to prepay \$250,000 toward its share of gTLD registry-level fees at the time of signing of this Agreement.

7. Data Escrow. NSI shall deposit into escrow all Registry Data on a schedule (not more frequently than weekly for a complete set of Registry Data, and daily for incremental updates) and in an electronic format mutually approved from time to time by NSI and ICANN, such approval not to be unreasonably withheld by either party. The escrow shall be maintained, at NSI's expense, by a reputable escrow agent mutually approved by NSI and ICANN, such approval also not to be unreasonably withheld by either party. The escrow shall be held under an agreement among ICANN, NSI, the United States Department of Commerce, and the escrow agent providing that (A) the data shall be received and held in escrow, with no use other than verification that the deposited data is complete and in proper format, until released to ICANN or to the United States Department of Commerce; (B) the data shall be released to ICANN upon termination of this Agreement by ICANN under [Section 14](#) or upon the Expiration Date if (1) this Agreement has not sooner been terminated and (2) it has been finally determined by the ICANN Board (and no injunction obtained pursuant to [Section 13](#) has been obtained) that NSI will not be designated as the successor registry under [Section 22 of this Agreement](#); and (C), in the alternative, the data shall be released to the United States Department of Commerce according to the terms of the cooperative agreement between NSI and the United States Government.

8. NSI Handling of Personal Data. NSI agrees to notify registrars sponsoring registrations in the registry of the purposes for which Personal Data submitted to the registry by registrars is collected, the recipients (or categories of recipients) of such Personal Data, and the mechanism for access to and correction of such Personal Data. NSI shall take reasonable steps to protect Personal Data from loss, misuse, unauthorized disclosure, alteration or destruction. NSI shall not use or authorize the use of Personal Data in a way that is incompatible with the notice provided to registrars.

9. Publication by NSI of Registry Data.

(A) NSI shall provide an interactive web page and a port 43 Whois service providing free public query-based access to up-to-date (i.e. updated at least daily) registry database data which, in response to input of an SLD name, shall report at least the following data elements in response to queries: (a) the SLD name registered, (b) the TLD in which the SLD is

registered; (c) the IP addresses and corresponding names of the primary nameserver and secondary nameserver(s) for such SLD, (d) the identity of the sponsoring Registrar, and (e) the date of the most recent modification to the domain name record in the registry database; provided, however, that if ICANN adopts a Consensus Policy that adds to or subtracts from these elements, NSI will implement that policy.

(B) To ensure operational stability of the registry, NSI may temporarily limit access under [subsection \(A\)](#), in which case NSI shall immediately notify ICANN of the nature of and reason for the limitation. NSI shall not continue the limitation longer than three business days if ICANN objects in writing, which objection shall not be unreasonably made. Such temporary limitations shall be applied in a nonarbitrary manner and shall apply fairly to any registrar similarly situated, including NSI.

(C) NSI as registry shall comply with Consensus Policies providing for development and operation of a capability that provides distributed free public query-based (web and command-line) access to current registration data implemented by registrars providing for capabilities comparable to WHOIS, including (if called for by the Consensus Policy) registry database lookup capabilities according to a specified format. If such a service implemented by registrars on a distributed basis does not within a reasonable time provide reasonably robust, reliable and convenient access to accurate and up-to-date registration data, NSI as registry shall cooperate and, if reasonably determined to be necessary by ICANN (considering such possibilities as remedial action by specific registrars), provide data from the registry database to facilitate the development of a centralized service providing equivalent functionality in a manner established by a Consensus Policy.

10. Rights in Data. Except as permitted by the Registrar License and Agreement, NSI shall not be entitled to claim any intellectual property rights in data in the registry supplied by or through registrars other than NSI. In the event that Registry Data is released from escrow under [Section 7](#) or transferred to a Successor Registry under [Section 22\(D\)](#), any rights held by NSI as registry in the data shall automatically be licensed on a non-exclusive, irrevocable, royalty-free, paid-up basis to the recipient of the data.

11. Limitation of Liability. Neither party shall be liable to the other under this Agreement for any special, indirect, incidental, punitive, exemplary or consequential damages.

12. Specific Performance. During the Term of this Agreement, either party may seek specific performance of any provision of this Agreement as provided by [Section 13](#), provided the party seeking such performance is not in material breach of its obligations.

13. Resolution of Disputes Under This Agreement. Disputes arising under or in connection with this Agreement, including requests for specific performance, shall be resolved in a court of competent jurisdiction or, at the election of both parties (except for any dispute over whether a policy adopted by the Board is a Consensus Policy, in

which case at the election of either party), by an arbitration conducted as provided in this Section pursuant to the International Arbitration Rules of the American Arbitration Association ("AAA"). The arbitration shall be conducted in English and shall occur in Los Angeles County, California, USA. There shall be three arbitrators: each party shall choose one arbitrator and, if the two arbitrators are not able to agree on a third arbitrator, the third shall be chosen by the AAA. The parties shall bear the costs of the arbitration in equal shares, subject to the right of the arbitrators to reallocate the costs in their award as provided in the AAA rules. The parties shall bear their own attorneys' fees in connection with the arbitration, and the arbitrators may not reallocate the attorneys' fees in conjunction with their award. The arbitrators shall render their decision within ninety days of the initiation of arbitration. In all litigation involving ICANN concerning this Agreement (whether in a case where arbitration has not been elected or to enforce an arbitration award), jurisdiction and exclusive venue for such litigation shall be in a court located in Los Angeles, California, USA; however, the parties shall also have the right to enforce a judgment of such a court in any court of competent jurisdiction. For the purpose of aiding the arbitration and/or preserving the rights of the parties during the pendency of an arbitration, the parties shall have the right to seek temporary or preliminary injunctive relief from the arbitration panel or a court located in Los Angeles, California, USA, which shall not be a waiver of this arbitration agreement.

14. Termination.

(A) In the event an arbitration award or court judgment is rendered specifically enforcing any provision of this Agreement or declaring a party's rights or obligations under this Agreement, either party may, by giving written notice, demand that the other party comply with the award or judgment. In the event that the other party fails to comply with the order or judgment within ninety days after the giving of notice (unless relieved of the obligation to comply by a court or arbitration order before the end of that ninety-day period), the first party may terminate this Agreement immediately by giving the other party written notice of termination.

(B) In the event of termination by DOC of its Cooperative Agreement with NSI pursuant to [Section I.B.8 of Amendment 19 to that Agreement](#), ICANN shall, after receiving express notification of that fact from DOC and a request from DOC to terminate NSI as the operator of the registry database for the Registry TLDs, terminate NSI's rights under this Agreement, and shall cooperate with DOC to facilitate the transfer of the operation of the registry database to a successor registry.

15. Assignment. Neither party may assign this Agreement without the prior written approval of the other party, such approval not to be unreasonably withheld. Notwithstanding the foregoing sentence, a party may assign this Agreement by giving written notice to the other party in the following circumstances, provided the assignee agrees in writing with the other party to assume the assigning party's obligations under this Agreement: (a) NSI may assign this Agreement as part of the transfer of its registry business approved under [Section 25](#) and (b) ICANN may, in conjunction with a reorganization or reincorporation of ICANN and with the written approval of the Department of Commerce, assign this Agreement to another non-profit corporation organized for the same or substantially the same purposes as ICANN.

16. Relationship to Cooperative Agreement Between NSI and U.S. Government.

(A) NSI's obligations under this Agreement are conditioned on the agreement by NSI and the Department of Commerce to Amendment 19 to the Cooperative Agreement in the form attached to this Agreement as [Appendix C](#).

(B) If within a reasonable period of time ICANN has not made substantial progress towards having entered into agreements with competing registries and NSI is adversely affected from a competitive perspective, NSI may terminate this Agreement with the approval of the U.S. Department of Commerce. In such event, as provided in [Section 16\(A\) above](#), the Cooperative Agreement shall replace this Agreement.

(C) In the case of conflict while they are both in effect, and to the extent that they address the same subject in an inconsistent manner, the term(s) of the Cooperative Agreement shall take precedence over this Agreement.

17. NSI Agreements with Registrars. NSI shall make access to the Shared Registration System available to all ICANN-accredited registrars subject to the terms of the NSI/Registrar License and Agreement (attached as [Appendix B](#)). Such agreement may be revised by NSI, provided however, that any such changes must be approved in advance by ICANN. Such agreement shall also be revised to incorporate any Registry Service Level Agreement implemented under [Section 18](#).

18. Performance and Functional Specifications for Registry Services. Unless and until ICANN adopts different standards as a Consensus Policy pursuant to [Section 4](#), NSI shall provide registry services to ICANN-accredited registrars meeting the performance and functional specifications set forth in SRS specification version 1.0.6 dated September 10, 1999, as supplemented by [Appendix E](#) and any Registry Service Level Agreement established according to this [Section 18](#). In the event ICANN adopts different performance and functional standards for the registry as a Consensus Policy in compliance with [Section 4](#), NSI shall comply with those standards to the extent practicable, provided that compensation pursuant to the provisions of [Section 20](#) has been resolved prior to implementation and provided further that NSI is given a reasonable time for implementation. In no event shall NSI be required to implement any different functional standards before 3 years from the Effective Date of this Agreement.

Within 45 days after the Effective Date, (i) representatives designated by ICANN of registrars accredited by ICANN for the Registry TLDs and (ii) NSI will establish a Registry Service Level Agreement for the registry system that shall include, at least:

(A) identified service level parameters and measurements regarding performance of the registry system, including, for example, system availability;

(B) responsibilities of registrars using the registry system and NSI (e.g., the obligation of the registrars to notify NSI of any experienced registry system outages and the obligation of NSI to respond in a timely manner to registry system outages);

- (C) an appropriate service-level dispute-resolution process; and
- (D) remedies for failure to comply with the Registry Service Level Agreement.

Unless the Registry Service Level Agreement requires fundamental architecture changes to the registry system or extraordinary increases in costs to NSI beyond what is generally required to implement a service level agreement (which is not the intent of the parties) the creation and implementation of the Registry Service Level Agreement shall not result in a price increase under [Section 20](#).

The 45-day drafting process for the Registry Service Level Agreement shall be structured as follows: (E) the designated representatives and NSI (the "SLA Working Group") shall promptly meet and shall within 20 days after the Effective Date complete a draft of the Registry Service Level Agreement; (F) all registrars accredited by ICANN for the Registry TLDs shall have 10 days after distribution of that draft to submit comments to the SLA Working Group; and (G) the SLA Working Group shall meet again to finalize the Registry Service Level Agreement, taking into account the comments of the registrars. The 45-day period shall be subject to extension by mutual agreement of the members of the SLA Working Group. The SLA shall be implemented as soon as reasonably feasible after its completion and approval by ICANN, including by implementation in stages if appropriate.

After it is approved by the SLA Working Group and ICANN, the Registry Service Level Agreement shall be incorporated in the NSI/Registrar License and Agreement referred to in [Section 17](#).

19. Bulk Access to Zone Files. NSI shall provide third parties bulk access to the zone files for .com, .net, and .org TLDs on the terms set forth in the [zone file access agreement \(attached as Appendix D\)](#). Such agreement may be revised by NSI, provided however, that any such changes must be approved in advance by ICANN.

20. Price for Registry Services. The price(s) to accredited registrars for entering initial and renewal SLD registrations into the registry database and for transferring a SLD registration from one accredited registrar to another will be as set forth in [Section 5 of the Registrar License and Agreement](#) (attached as [Appendix B](#)). These prices shall be increased through an amendment to this Agreement as approved by ICANN and NSI, such approval not to be unreasonably withheld, to reflect demonstrated increases in the net costs of operating the registry arising from (1) ICANN policies adopted after the date of this Agreement, or (2) legislation specifically applicable to the provision of Registry Services adopted after the date of this Agreement, to ensure that NSI recovers such costs and a reasonable profit thereon; provided that such increases exceed any reductions in costs arising from (1) or (2) above.

21. Additional NSI Obligations.

- (A) NSI shall provide all licensed Accredited Registrars (including NSI acting as registrar) with equivalent access to the Shared Registration System. NSI further agrees that it will make a certification to ICANN every six months, using the objective criteria set forth in [Appendix F](#) that NSI is providing all licensed Accredited Registrars with equivalent access to its

registry services.

(B) NSI will ensure, in a form and through ways described in [Appendix F](#) that the revenues and assets of the registry are not utilized to advantage NSI's registrar activities to the detriment of other registrars.

22. Designation of Successor Registry.

(A) Not later than one year prior to the end of the term of this Agreement, ICANN shall, in accordance with [Section 4](#), adopt an open, transparent procedure for designating a Successor Registry. The requirement that this procedure be opened one year prior to the end of the Agreement shall be waived in the event that the Agreement is terminated prior to its expiration.

(B) NSI or its assignee shall be eligible to serve as the Successor Registry and neither the procedure established in accordance with [subsection \(A\)](#) nor the fact that NSI is the incumbent shall disadvantage NSI in comparison to other entities seeking to serve as the Successor Registry.

(C) If NSI or its assignee is not designated as the Successor Registry, NSI or its assignee shall cooperate with ICANN and with the Successor Registry in order to facilitate the smooth transition of operation of the registry to Successor Registry. Such cooperation shall include the timely transfer to the Successor Registry of an electronic copy of the registry database and of a full specification of the format of the data.

(D) ICANN shall select as the Successor Registry the eligible party that it reasonably determines is best qualified to perform the registry function under terms and conditions developed as a Consensus Policy, taking into account all factors relevant to the stability of the Internet, promotion of competition, and maximization of consumer choice, including without limitation: functional capabilities and performance specifications proposed by the eligible party for its operation of the registry, the price at which registry services are proposed to be provided by the party, relevant experience of the party, and demonstrated ability of the party to handle operations at the required scale. ICANN shall not charge any additional fee to the Successor Registry.

(E) In the event that a party other than NSI or its assignee is designated as the Successor Registry, NSI shall have the right to challenge the reasonableness of ICANN's failure to designate NSI or its assignee as the Successor Registry under the provisions of [Section 13 of this Agreement](#).

23. Expiration of this Agreement. The Expiration Date shall be four years after the Effective Date, unless extended as provided below. In the event that NSI completes the legal separation of ownership of its Registry Services business from its registrar business by divesting all the assets and operations of one of those businesses within 18 months after Effective Date to an unaffiliated third party that enters an agreement enforceable by ICANN and the Department of Commerce (i) not to be both a registry and a registrar in the Registry TLDs, and (ii) not to control, own or have as an affiliate any individual(s) or entity(ies) that, collectively, act as both a registry and a registrar in

the Registry TLDs, the Expiration Date shall be extended for an additional four years, resulting in a total term of eight years. For the purposes of this Section, "unaffiliated third party" means any entity in which NSI (including its successors and assigns, subsidiaries and divisions, and their respective directors, officers, employees, agents and representatives) does not have majority equity ownership or the ability to exercise managerial or operational control, either directly or indirectly through one or more intermediaries. "Control," as used in this [Section 23](#), means any of the following: (1) ownership, directly or indirectly, or other interest entitling NSI to exercise in the aggregate 25% or more of the voting power of an entity; (2) the power, directly or indirectly, to elect 25% or more of the board of directors (or equivalent governing body) of an entity; or (3) the ability, directly or indirectly, to direct or cause the direction of the management, operations, or policies of an entity.

24. Withdrawal of Recognition of ICANN by the Department of Commerce. In the event that, prior to the expiration or termination of this Agreement under [Section 14](#) or [16\(B\)](#), the United States Department of Commerce withdraws its recognition of ICANN as NewCo under the Statement of Policy pursuant to the procedures set forth in [Section 5 of Amendment 1](#) (dated November 10, 1999) to the Memorandum of Understanding between ICANN and the Department of Commerce, this Agreement shall terminate.

25. Assignment of Registry Assets. NSI may assign and transfer its registry assets in connection with the sale of its registry business only with the approval of the Department of Commerce.

26. Option to Substitute Generic Agreement. At NSI's option, it may substitute any generic ICANN/Registry agreement that may be adopted by ICANN for this Agreement; provided, however, that [Sections 16, 19, 20, 21, 23, 24](#), and [25](#) of this Agreement will remain in effect following any such election by NSI.

27. Notices, Designations, and Specifications. All notices to be given under this Agreement shall be given in writing at the address of the appropriate party as set forth below, unless that party has given a notice of change of address in writing. Any notice required by this Agreement shall be deemed to have been properly given when delivered in person, when sent by electronic facsimile, or when scheduled for delivery by internationally recognized courier service. Designations and specifications by ICANN under this Agreement shall be effective when written notice of them is deemed given to Registry.

If to ICANN, addressed to:

Internet Corporation for Assigned Names and Numbers
4676 Admiralty Way, Suite 330
Marina Del Rey, California 90292
Telephone: 1/310/823-9358
Facsimile: 1/310/823-8649
Attention: Chief Executive Officer

If to Registry, addressed to:

1. Network Solutions, Inc.

505 Huntmar Park Drive
Herndon, VA 20170
Telephone: 1/703/742-0400
Facsimile: 1/703/742-3386
Attention: General Counsel

2.Network Solutions, Inc.
505 Huntmar Park Drive
Herndon, VA 20170
Telephone: 1/703/742-0400
Facsimile: 1/703/742-3386
Attention: Registry General Manager

28. Dates and Times. All dates and times relevant to this Agreement or its performance shall be computed based on the date and time observed in Los Angeles, California, USA.

29. Language. All notices, designations, and specifications made under this Agreement shall be in the English language.

30. Entire Agreement. This Agreement constitutes the entire agreement of the parties hereto pertaining to the registry for the Registry TLDs and supersedes all prior agreements, understandings, negotiations and discussions, whether oral or written, between the parties on that subject. This Agreement is intended to coexist with any Registrar Accreditation Agreement between the parties.

31. Amendments and Waivers. No amendment, supplement, or modification of this Agreement or any provision hereof shall be binding unless executed in writing by both parties. No waiver of any provision of this Agreement shall be binding unless evidenced by a writing signed by the party waiving compliance with such provision. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provision hereof, nor shall any such waiver constitute a continuing waiver unless otherwise expressly provided.

32. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in duplicate by their duly authorized representatives.

INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS

By: _____

Michael M. Roberts

President and CEO

Date: November 10, 1999

NETWORK SOLUTIONS, INC.

By: _____

Jonathan W. Emery

Senior Vice President, General

Counsel & Secretary

Date: November 10, 1999

Page modified 10-November-1999

EXHIBIT JZ-33



Prepared Testimony

of

Esther Dyson

Interim Chairman of the Board of Directors
Internet Corporation for Assigned Names and Numbers

July 22, 1999

U.S. House of Representatives
Committee on Commerce
Subcommittee on Oversight and Investigations

Mr. Chairman and Members of the Subcommittee:

I welcome the opportunity to appear here today on behalf of the many, many people around the world who are working together to create the global, non-profit, consensus-development body called the Internet Corporation for Assigned Names and Numbers (ICANN).

I. Introduction: The Challenge of Creating a Private Sector, Consensus-Based Organization

As you know, ICANN was formed by the Internet community in response to the challenge set forth by the United States Government in its June 1998 Statement of Policy on the Management of Internet Domain Names and Addresses, commonly known as the White Paper. The White Paper called upon the global Internet community to create "a new, not-for-profit corporation formed by private sector Internet stakeholders to administer policy for the Internet name and address system," 63 Fed. Reg. 31749, and specified that the new corporation should be dedicated to community consensus and to promoting the stability of the Internet; competition and market mechanisms; private sector bottom-up, coordination; and functional and geographic representation.

ICANN is working hard to fulfill the mandate of the White Paper. Developing global consensus is an elusive goal, especially when it must be generated entirely within the private sector, with only the encouragement — but none of the money or power — of the world's governments. Nevertheless, the various communities around the world that make up and depend on the Internet have taken up the challenge, and ICANN is the result: a work still in progress but substantially underway.

Mr. Chairman, I regret that the title of today's hearing ("Is ICANN Out of Control?") conveys an erroneous impression about what ICANN is and what it is doing. Even more seriously, the title of the hearing tends to distract attention from the truly fundamental issue before this Subcommittee: How will the Internet's plumbing be managed? More to the point, will the coordination of the Internet's key technical functions be administered (1) by the world's governments and bureaucrats, (2) by a private company pursuing its own private economic interests, or (3) by the global Internet community as a whole? ICANN represents a strong endorsement of option (3), a consensus-based private-sector vehicle through which the Internet community — engineers and entrepreneurs, businesses and academics, non-profits and individuals alike — will coordinate Internet names and numbers. The fact that these hearings are taking place today under this title, however, is stark evidence that this issue — how will the Internet's plumbing be managed? — is still in doubt.

The ultimate resolution of this issue is very important to the future of the Internet, which owes its successful development in large part to a lack of control by governments or private concerns. The Internet is perhaps the world's most successful voluntary cooperative effort. It has developed based on a voluntary consensus about the technical standards and naming system which allow it to function, fostered by the unusual willingness of governments (especially the United States Government) to leave it alone. It earned legitimacy because it worked well and served its users. This voluntary cooperative environment has produced a truly wonderful global resource, and the Internet community's creation of ICANN is intended to allow that basic approach to continue, even as the Internet becomes ever more complex, more important for commerce and society, and more ubiquitous.

Because nothing like ICANN has ever been attempted before, its success is not assured, but because it seeks to embrace and build on the consensus tradition of the Internet, it has at least a chance to succeed. ICANN is intended to replace a highly informal, unstructured system where a very few individuals made key decisions about the future and direction of the Internet. Those individuals were remarkably wise and unselfish, and the fact that the vast majority of their decisions were in the public interest is evidenced by the very success and growth of the Internet itself. But individuals are not immortal, as we are so frequently reminded, and thus we need more permanent structures if we are to continue this tradition of consensus.

ICANN is itself the product of what the Internet engineers call "rough consensus," and its sole objective is to encourage the continued coordination of some key technical and policy details of Internet management through the development and implementation of community-wide consensus. As I have noted, developing this consensus is not an easy task, and is inevitably accompanied by contention and disagreement. Consensus, after all, is a result of disagreement and debate followed by compromise among people of good faith. As those of us intimately involved in this process have certainly seen, feelings can run deep and the debates can be intense. But this already difficult task has been made even more difficult by the fact that the creation of ICANN is happening simultaneously with the transition from a monopoly to a competitive environment for the activity most widely associated with the Internet's plumbing, the registration of domain names.

Transitions from monopoly to competition are difficult and messy under the best of circumstances, as this Committee is fully aware given its oversight over the telecommunications industry. But in that industry, the transition is being managed by federal, state and local governments, which ultimately can rely on the coercive power only governments possess. Here, by contrast, the transition from monopoly to competition is being attempted at the same time that the United States Government's supervisory power over its contractors is being replaced with a newly-created process for developing community-wide consensus through a private-sector, non-profit entity.

I would like to speak directly to the issues relating to ICANN's relationship with the current monopoly government contractor in this area, Network Solutions, Inc. Network Solutions is an important member of the Internet community, and participated very significantly in the process of forming ICANN and in its consensus-development efforts to date. It has important management responsibilities for the domain name system today, and has contributed to its growth over the last several years. It is a voice that needs to be heard. But it is not the only voice, nor can or should it be the decisive voice. Network Solutions was hired by the United States Government to do a job, and in large part it appears to have done it well. It has much experience and knowledge to offer.

Nevertheless, as Network Solutions's Senior Vice President for Internet Relations noted recently (Inter@ctive Week, July 19, 1999), it has a "fiduciary duty to [its] shareholders," and not to the global Internet community as a whole.

Its primary responsibility is to "make a reasonable profit," not to develop and follow the community's consensus. Thus, while it should be an important participant in the debates, and, one hopes, a constructive contributor to the creation of consensus, it should not be permitted to unilaterally determine how this important global resource will be managed.

Mr. Chairman, we need to be clear about this: there is no issue about ICANN being "out of control." ICANN is nothing more or less than the embodiment of the Internet community as a whole. It reflects the participation of a large and growing number of technical, business, public-interest, academic, and other segments of the Internet community. It is this collection of diverse interests and experiences that produces ICANN policies and decisions, as a statement of the consensus of the participants.

But consensus does not always or necessarily mean unanimity, and there are certainly those in the community who disagree, for various reasons, with particular consensus positions produced by this process. Some disagreements are philosophical; some are cultural; some are economic. This is inevitable given the diversity of interests involved and the cultural, political and economic issues implicated by the matters that ICANN has dealt with. The fact of those disagreements, however, is evidence of the process itself, not of any problems with it.

II. Open Meetings, Board Elections, and the "Domain Name Tax"

Mr. Chairman, in your letter of June 22, 1999, you posed a series of questions relating to ICANN's formation, its structure and policies. ICANN's response, transmitted on July 8, 1999, encompassed forty-six pages and nine attachments. Rather than repeat the extensive information detailed in our responses (attached as Exhibit A), let me briefly address the four key issues that have attracted the most attention and controversy in recent weeks:

- Closed Board meetings (or, "Is ICANN making secretive decisions in the shadows?");
- Elected Board members (or, "When will the mysteriously chosen Initial Board give up the reins of ICANN to Board members properly elected by the Internet community?");
- A permanent cost-recovery structure (or, "How dare ICANN try to impose a Domain Name Tax?"); and
- Constraints on ICANN's authority (or, "Is ICANN a new Internet regulatory agency? What's to stop ICANN from taking away my domain name or censoring my web site?").

These four areas of concern have been raised by a number of parties, including you, Mr. Chairman, in your letter of June 22, and the U.S. Department of Commerce in its letter of July 8, 1999. In response to specific suggestions made by the Department of Commerce, the ICANN Board has agreed upon steps to address those concerns.

Closed Board meetings. The Department of Commerce suggested that ICANN open its Initial Board meetings to the public. In response, ICANN's Initial Board has decided to hold the Santiago Board meeting as a public meeting, and to deal with all pending issues publicly (except for personnel or legal matters, if any, that might require an executive session).

Following Santiago, nine elected Board members will join the current complement, and we will defer to that full Board any decisions on future meeting procedures, since the experience in Santiago will then be available to inform their decisions. ICANN's bylaws provide that the Annual Meeting (which will be held in Los Angeles in November) must be a public meeting.

I should note that the Initial Board believes very strongly that it has carried out its responsibilities openly and transparently, recognizing community consensus when it exists and encouraging its development when it does not, and all in full view of the global public. The agendas of all ICANN Initial Board meetings are posted in advance of each meeting; at each quarterly meeting, the agenda is open for full public discussion in advance; any resolutions adopted by the Board or decisions taken are announced and released immediately following those decisions; and the full minutes of every Board meeting are posted for public review. The Board takes care to engage in public discussions of its efforts; it both encourages and considers public input, and fully discloses its own decision-making criteria. All public comments, Advisory Committee recommendations, and staff proposals have been posted on the ICANN web site well in advance of Board meetings. The only Board activity that has not (until now) been fully public is interaction between it and its staff, and discussion among the Board members of staff recommendations, at the exact time that they happen. Full minutes of decisions taken and the reasons for them (including any formal

actions of the Board), of course, are posted publicly shortly after they occur. In short, the Board has made all the inputs and outputs of its decision making process fully available to the world at large.

In any event, the Initial Board has decided to open its next meeting, in Santiago, to public observation.

Elected Board members. ICANN's elected Directors will join the Board in two waves: the first wave will consist of nine Directors chosen by ICANN's Supporting Organizations; the second wave will be elected by an At-Large membership consisting of individual Internet users. The Board expects the first wave to be completed by November 1999, and the second wave as soon as possible following that. In any event, the process of creating a fully elected Board must be completed by September 2000.

As to the first wave of elected Board members, ICANN expects that the nine Directors to be elected by its three Supporting Organizations (the Domain Name Supporting Organization, the Address Supporting Organization, and the Protocol Supporting Organization) will be selected and seated in time for ICANN's annual meeting in November in Los Angeles.

As to the second wave, it is ICANN's highest priority to complete the work necessary to implement a workable At-Large membership structure and to conduct elections for the nine At-Large Directors that must be chosen by the membership. ICANN has been working diligently to accomplish this objective as soon as possible. The Initial Board has received a comprehensive set of recommendations from ICANN's Membership Advisory Committee, and expects to begin the implementation process at its August meeting in Santiago. ICANN's goal is to replace each and every one of the current Initial Board members as soon as possible, consistent with creating a process that minimizes the risk of capture or election fraud, and that will lead to a truly representative Board.

Permanent cost-recovery structure. ICANN has decided to defer the implementation of its volume-based cost-recovery registrar fee (mischaracterized by some as a "Domain Name Tax"), and to convene a task force to study available funding options and recommend to ICANN and the Internet community a fair and workable allocation of the funding required to cover ICANN's costs.

The task force will include representatives of the key entities involved in the DNS infrastructure: the domain name registries, address registries, and domain name registrars that have (or are likely to have) contractual relationships with ICANN. Charged with reviewing the options for fair and workable cost-recovery mechanisms, the task force will be asked to make its recommendations by October 1, 1999, with an interim report (if possible) prior to the Santiago meeting in late August. ICANN will, of course, post those recommendations for public comment, so that the Board (which will then consist of a full complement of 19) will be able to consider those recommendations at its November Annual Meeting.

Nevertheless, let me say a few words about ICANN's now-deferred cost-recovery structure. The volume-based user fee that has been mischaracterized as a "Domain Name Tax" — in which the competing registrars contribute to ICANN's cost-recovery budget based on the volume of their registrations — seemed to be a fair and workable way to spread the costs among the companies and organizations that benefit from ICANN's DNS coordination and pro-competition activities. The registry fee was adopted following a thorough process of public notice and comment, and was broadly supported by an apparent consensus of the community. For example, the Coalition of Domain Name Registrars, a group consisting of most of the registrars that would actually be responsible for paying those fees, has written to Congress indicating that they have no objections to paying their fair share of ICANN's costs in this way. I understand that the Subcommittee will have an opportunity to hear from three of the competing registrars later today.

In sum, we continue to believe that a volume-based fee is a fair and appropriate way to spread ICANN's cost-recovery needs. Indeed, in its response to the Chairman's questions, the Department of Commerce (which was fully apprised of the process that produced this consensus position) agreed that this was a rational and appropriate approach that (1) was the result of full notice and comment, (2) was consistent with the White Paper, and (3) was fully authorized by ICANN's Memorandum of Understanding with the DoC. Nevertheless, the DoC suggested that, because it has become controversial, ICANN should suspend this approach until there are elected Board members. ICANN has agreed to do so, pending the recommendations of the new task force on funding options.

Obviously, ICANN must have a stable source of income adequate to cover the costs of its technical coordination and consensus-based policy development functions. The United States Government has asked ICANN to do an important job, but it has not provided the means by which to carry it out, leaving the job of providing funds to the Internet community itself. To date, ICANN has relied on voluntary donations, and a number of people and organizations have been very generous. But this is neither an equitable way to allocate the recovery of costs nor a

means to assure stability over the long term. Thus, if ICANN is to continue, it is simply not possible to abandon the cost-recovery mechanism that has been produced by the consensus-development process and replace it with nothing.

ICANN's goal is simple: to establish a funding structure for the technical coordination of the Internet that is stable, effective, and equitable. Any proposed method that would meet this goal will receive serious attention from ICANN and the Internet community at large. If the members of this Committee have thoughts about how ICANN should be funded, we would be pleased to hear them.

Constraints on ICANN's authority. The ability of ICANN to make policy is very carefully cabined, both by its bylaws and by the terms of the White Paper. Nevertheless, as the Department of Commerce has noted, there remain concerns about the effectiveness of existing restrictions and limitations on the authority of the ICANN Board.

On this point, we certainly understand the concern, but it seems misplaced, given the clear limitations in ICANN's bylaws and articles of incorporation on the scope of its permissible activities. Nevertheless, ICANN is entirely willing to incorporate in its contracts with registries and registrars (or perhaps in its Memorandum of Understanding with the U.S. Government) language that says that no ICANN policy is being agreed to in those contracts that is not fully consistent with, and reasonably related to, the goals of ICANN as set forth in the White Paper, which are replicated in ICANN's bylaws. Such language would fully reflect both the original concepts that gave birth to ICANN and this Board's understanding of ICANN's proper role.

III. Network Solutions, Inc., and the Transition to Competition

I have already spoken directly about ICANN's relations with Network Solutions, Inc. I will try to address in some detail a few of the more serious erroneous contentions that Network Solutions has advanced with respect to ICANN.

Network Solutions has asserted in a number of forums that ICANN intends to terminate Network Solutions as a registrar of .com, .net, and .org domain names. Network Solutions has also claimed that ICANN's registrar accreditation agreements (which registrars must sign to become accredited for the .com, .net, and .org domains) grant ICANN the unrestrained authority to terminate a registrar on 15 days' notice. Both contentions are unequivocally wrong.

ICANN has no statutory or regulatory "authority" of any kind. It has only the power of the consensus that it represents, and the willingness of members of the Internet community to participate in and abide by the consensus development process that is at the heart of ICANN.

As you know, Network Solutions has held a government-granted monopoly in the market for domain name registration services in the .com, .net, and .org domains. In its October 1998 agreement with the Department of Commerce (Amendment 11), Network Solutions agreed that, once a competitive registrar system was introduced, a level playing field would be established for all registrars and that only properly accredited registrars would be permitted to provide domain name services to the public. When Network Solutions becomes an accredited registrar, it will continue to be able to offer domain name services as a competitor in a fair and open market; if it refuses to become accredited, as it has to date, its agreement with the US Government will prohibit it from offering domain name services in the .com, .net, and .org domains. When Network Solutions applies for accreditation from ICANN, ICANN will treat the application in the same manner as it would any other application, as required by its bylaws.

If the Committee has been told that ICANN has the power to terminate Network Solutions' authority to register domain names, or has asserted that it does, the Committee has been misinformed. To clarify this point, the following description of the process for accrediting registrars may be helpful:

- From January 1, 1993, until early June 1999, domain names in the .com, .net, and .org top-level domains were registered exclusively by Network Solutions under a Cooperative Agreement between it and the U.S. Government. As noted in the White Paper, public comments showed "widespread dissatisfaction about the absence of competition in domain name registration." Accordingly, in its June 1998 White Paper, the U.S. Government stated its intention to "ramp down [its] cooperative agreement with Network Solutions [then scheduled to expire September 30, 1998] with the objective of introducing competition into the domain name space."
- To implement the "ramp down," Network Solutions and the U.S. Government negotiated Amendment 11 to Network Solutions' cooperative agreement, by which Network Solutions and the U.S. Government agreed to

extend Network Solutions' registry monopoly for a two-year period (until September 30, 2000), during which Network Solutions must create a Shared Registry System to allow competing companies to register domain names in .com, .net, and .org. Since Network Solutions was going to continue to be the sole administrator of the registries for .com, .net, and .org for at least two years, while simultaneously acting as one of the competitors marketing name registration services in those domains, Amendment 11 stated that a neutral body to be formed by the Internet community ("NewCo," subsequently designated by the U.S. Government as ICANN) would carry out the coordinating functions required to ensure a freely competitive registration market. In Amendment 11, Network Solutions expressly acknowledged that NewCo "will have the authority, consistent with the provisions of the Statement of Policy and the agreement between the USG and NewCo, to carry out NewCo's responsibilities." On November 25, 1998, the Department of Commerce recognized ICANN as the NewCo entity referred to in Amendment 11; this was specifically reiterated to Network Solutions by letter on February 26, 1999.

- To achieve the White Paper's "objective of introducing competition into the domain name space," Amendment 11 provided that Network Solutions would implement a "Shared Registration System" to "create an environment conducive to the development of robust competition among domain name registrars." The schedule agreed to by Network Solutions and the USG provided for several phases, beginning with a "test bed" in which Network Solutions agreed to "establish a test bed supporting actual registrations in .com, .net and .org by 5 registrars accredited by NewCo (Accredited Registrars)" and ending with a reengineering of the overall system to "assure that Network Solutions, acting as registry, shall give all licensed Accredited Registrars (including Network Solutions acting as registrar) equivalent access ('equal access') to registry services through the Shared Registration System."

Thus, Network Solutions agreed in Amendment 11 that, after the introduction of competition into the registrar business, it would operate the registry to give access to, and only to, ICANN-accredited registrars (including Network Solutions). In this way, the level playing field necessary for effective competition in a shared registry environment would be established.

In sum, ICANN neither has nor claims any "authority to terminate Network Solutions' authority to register domain names." Instead, the requirement that Network Solutions must be accredited by ICANN to act as a registrar after the introduction of competition, so that it operates to the extent possible (given its continuing operation of the registries for .com, .net, and .org) under the same conditions as all other competing registrars, flows directly from Network Solutions' own agreement with the USG.

To date, Network Solutions has not requested to be accredited by ICANN, and certain individuals purporting to speak for Network Solutions have publicly stated that it does not intend to be accredited. ICANN has received no official communication on this issue from Network Solutions, and stands ready to treat an accreditation application from Network Solutions in exactly the same way it has responded to similar applications by others.

In fact, in the event Network Solutions chooses to seek accreditation, ICANN is required by its agreement with the U.S. Government to perform its accreditation function fairly, having specifically agreed in the MOU not to "act unjustifiably or arbitrarily to injure particular persons or entities or particular categories of persons or entities." This fairness provision, which parallels provisions in Amendment 11, ICANN's registrar accreditation policy, and ICANN's own bylaws, appropriately and effectively ensures against arbitrary denial of accreditation to Network Solutions or any other registrar.

Likewise, the registrar accreditation agreement is a contract between ICANN and its accredited registrars that provides a strong set of protections for accredited registrars. First, the registrar accreditation agreement spells out that ICANN can terminate accreditation only on the basis of a defined set of causes — for example, bankruptcy of the registrar or uncured breach of the registrar accreditation agreement. Second, the agreement provides for automatic renewal of accreditation: an accredited registrar (such as Network Solutions) "shall be entitled to renewal provided it meets the accreditation requirements then in effect." ICANN Registrar Accreditation Agreement, Sec. III(B)(i). In the event of an unresolved dispute over any company's renewal of accreditation, the accredited registrar is entitled to fifteen days' notice and the right to invoke neutral arbitration that will be binding on ICANN. Together, the rights to automatic renewal and arbitration afford registrars (including Network Solutions) the predictability that is needed for sensible business planning, and the assurance that ICANN cannot treat a given registrar arbitrarily.

Mr. Chairman, let me conclude by noting that ICANN's July 8, 1999, response to Chairman Bliley touches on a number of questions and issues that I do not have the time to address in my opening statement, including the process by which ICANN's Initial Board was selected, ICANN's relationships with country code top-level domain managers, intellectual property rights in registry databases, and ICANN's Transition Budget. Accordingly, I would ask that ICANN's response, along with the exhibits, be made a part of the record of today's hearing.

I thank the Committee for the opportunity to testify, and I look forward to answering your questions.

Esther Dyson
Interim Chairman of the Board of Directors
Internet Corporation for Assigned Names and Numbers

EXHIBIT JZ-34

ICANN Yokohama Meeting Topic: Introduction of New Top-Level Domains

Posted: 13 June 2000
 Deadline for [Public Comments](#): 10 July 2000

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I. Background

For several years, there have been proposals to introduce new top-level domains (TLDs) into the Internet Domain Name System (DNS). After a ten-month-long study, on 18 April 2000 the Names Council of the ICANN Domain Name Supporting Organization (DNSO) recommended that ICANN adopt a policy under which new TLDs would be introduced in a measured and responsible manner. The ICANN Board of Directors is expected to consider adopting such a policy at its [meeting on 15-16 July 2000 in Yokohama, Japan](#).

A. Present Structure of the Domain-Name System.

The DNS allows users to locate computers on the Internet by a name (e.g., www.icann.org) rather than a harder-to-remember IP address (e.g., 192.0.34.65). The DNS, which was introduced in the mid-1980s, is a distributed database containing resource records that allow you to input another computer's domain name, which your computer then maps to the other computer's IP address.

The DNS has a hierarchical structure, with each name composed of a series of "labels" separated by dots. The rightmost label in a name refers to the name's top-level domain (such as .org). Each top-level domain can be divided into many second-level domains (such as icann.org). Second-level domains can be divided into third-level domains (such as www.icann.org and members.icann.org), and so on.

The selection of TLDs within the DNS is defined by the root-zone file, the contents of which are made available to users on the Internet through the authoritative root server system. Under the White Paper, the responsibilities being transferred to ICANN include oversight of operation of that system.

For technical reasons, it is convenient to delegate the operation of each top-level domain to a single organization. Currently, the DNS employs top-level domains consisting of three types:

- The current three-letter codes are referred to as "generic TLDs." Presently these codes are .com, .net, .org, .edu, .int, .mil, and .gov. Descriptions of the intended purposes of these TLDs are set forth in [RFC 1591](#), which was issued in March 1994. No new TLDs in this category have been added since the late 1980s.
- Two-letter codes (such as .de, .jp, and .uk) are used to represent the names of countries and territories and are referred to as "country-code top-level domains," or simply "ccTLDs." The policies governing the establishment, delegation, and operation of ccTLDs are discussed in [ICP-1](#). Under these policies, ccTLDs are established only for two-letter codes appearing on the [ISO 3166-1 list](#). A few of these ccTLDs were established in the 1980s, but most were created in the mid- and late-1990s.
- There is one other top-level domain, .arpa, that has recently been designated to be used for Internet-infrastructure purposes. This top-level domain is [managed by the IANA](#) in cooperation with the Internet technical community under the guidance of the Internet Architecture Board.

Within the DNS database, all of the TLDs operate in a similar manner. They are distinguished mainly by their intended use, by which organization operates them, and by who is permitted to register names within them.

B. History of Discussions.

Although many new ccTLDs were established as new countries and territories joined the Internet, no other new TLDs have been established since the late 1980s. During the 1990s, various proposals were made to implement additional generic TLDs in the DNS. These proposals have ranged from adding a few gTLDs to several hundred. Different types of TLDs have been discussed, ranging from TLDs open to registrations by any person or organization for any use ("unrestricted TLDs") to TLDs intended for registrations by particular types of persons or organizations or for particular uses ("restricted" or "chartered" TLDs).

The US Government's June 1998 [White Paper](#), which proposed transitioning the Government's responsibilities for technical coordination of the Internet to a private-sector not-for-profit corporation (now ICANN), noted that the private-sector coordinating corporation should ultimately have the authority necessary to oversee policy for determining the circumstances under which new TLDs are added to the root system. The White Paper noted, however, that:

"At least in the short run, a prudent concern for the stability of the system suggests that expansion of gTLDs proceed at a deliberate and controlled pace to allow for evaluation of the impact of the new gTLDs and well-reasoned evolution of the domain space. New top level domains could be created to enhance competition and to enable the new corporation to evaluate the functioning, in the new environment, of the root server system and the software systems that enable shared registration."

On 30 April 1999, the World Intellectual Property Organization, which at the request of the US Government had conducted a study of intellectual-property issues in connection with the DNS and the various proposals for its evolution, submitted a report to the ICANN Board of Directors. That report [concluded](#) that new gTLDs could be introduced, provided that various measures were adopted to protect intellectual-property rights and that the new TLDs were introduced in a slow and controlled manner that takes into account the efficacy of the proposed measures in reducing existing problems. Among the intellectual-property protections was a proposed mechanism for protecting globally famous names in any new generic TLDs.

At its meeting in Berlin on 27 May 1999, the ICANN Board [referred](#) the issues of TLD expansion and globally famous trademarks to the newly formed ICANN Domain Name Supporting Organization (DNSO).

On 25 June 1999, the DNSO Names Council (which manages the process for development of policy recommendations within the DNSO) [created](#) a group, known as [Working Group C](#), to study the issues raised by the introduction of new gTLDs. The Names Council also created another group, known as Working Group B, to study issues concerning the protection of famous trademarks in the context of any newly introduced generic TLDs.

C. Names Council Recommendation on New TLDs.

Working Group C submitted [its report](#) to the DNSO Names Council on 21 March 2000 and [posted the report for public comment](#). Public comments were solicited and received through the icann.org web-based comment forum and via e-mail to the dnso.org site. Working Group C provided a [supplemental report](#) on 17 April 2000.

The Names Council discussed these reports and comments at a [telephone conference](#) held on 18/19 April 2000. At that meeting, the Names Council adopted the following statement of its recommendations, by a vote of 16-0 (two members were absent):

DNSO Names Council Statement of 18/19 April 2000 on New gTLDs

"The Names Council determines that the report of Working Group C and related comments indicate that there exists a consensus for the introduction of new gTLDs in a measured and responsible manner. The Names Council therefore recommends to the ICANN Board that it establish a policy for the introduction of new gTLDs in a measured and responsible manner, giving due regard in the implementation of that policy to (a) promoting orderly registration of names during the initial phases; (b) minimizing the use of gTLDs to carry out infringements of intellectual property rights; and (c) recognizing the need for ensuring user confidence in the technical operation of the new TLD and the DNS as a whole.

"Because there is no recent experience in introducing new gTLDs, we recommend to the Board that a limited number of new top-level domains be introduced initially and that the future introduction of additional top-level domains be done only after careful evaluation of the initial introduction. The Names Council takes note of the fact that the WG C report indicates that several types of domains should be considered in the initial introduction, these being: fully open top-level domains, restricted and chartered top-level domains with limited scope, non-commercial domains and personal domains. Implementation should promote competition in the domain-name registration business at the registry and registrar levels. The Names Council recognizes that any roll-out must not jeopardize the stability of the Internet, and assumes a responsible process for introducing new gTLDs, which

includes ensuring that there is close coordination with organizations dealing with Internet protocols and standards.

"To assist the Board in the task of introducing new gTLDs, the Names Council recommends that the ICANN staff invite expressions of interest from parties seeking to operate any new gTLD registry, with an indication as to how they propose to ensure to promote these values.

"We would like to extend our deep appreciation to the substantial number of participants who worked so diligently in Working Groups B and C, and want to thank them for their significant efforts in evaluating the issues that were referred to them. Recognizing the Working Group C has recently approved additional principles and that Working Group B's formal report was provided to us yesterday, we advise the Board that we will be providing supplemental recommendations in the near future."

The Names Council held a telephone conference on 19 May 2000 to discuss the [final report of Working Group B](#). The Names Council adopted the following statement, again by a vote of 16-0 (two members were absent):

DNSO Names Council Statement of 19 May 2000 on Famous Trademarks and the Operation of the DNS

"The Names Council recognizes the enormous work undertaken by Working Group B. The Names Council acknowledges that according to its final report, Working Group B has reached consensus on three points, namely:

1. Some type of mechanism, yet to be determined, is necessary in connection with famous trademarks and the operation of the Domain Name System.
2. There does not appear to be the need for the creation of a universally famous marks list at this point in time.
3. The protection afforded to trademark owners should depend upon the type of top-level domains that are added to the root.

"With regards to points (1) and (3), the NC notes that the Working Group members could not reach consensus on the type of mechanism that should be incorporated into the roll-out of new gTLDs (point (1)), which is understandable given their consensus in point (3) that the protection should likely vary depending on the type of top-level domain.

"The NC concludes that there is community consensus and recommends that there should be varying degrees of protection for intellectual property during the startup phase of new top-level domains. Therefore, the NC recommends that the ICANN Board make clear that nothing in the general consensus items, or areas of non-consensus, should be construed as creating immunity from the UDRP or other legal proceeding should a domain name registrant in a chartered top-level domain violate the charter or other legal enforceable rights. The NC notes that the principles of differentiated gTLDs (from WG-C) may provide additional assistance in avoiding confusion.

"With regards to item (2) on universally famous marks, the NC concludes that there is no consensus in the community at the present time that such a list should be adopted by ICANN.

"The NC also recommends to the ICANN Board that it take note of the Working Group B report, including the submissions by participating parties.

"The NC would like to express its gratitude to the hard work of Michael D. Palage, Kathryn Kleiman, and Philip Sheppard in steering the Working Group and seeking to guide them towards consensus on the difficult set of issues they were assigned."

D. Action in Yokohama on New TLDs.

At its 16 July 2000 meeting in Yokohama, the ICANN Board will consider the Names Council's 18/19 April 2000 recommendation that the Board adopt "a policy for the introduction of new gTLDs in a measured and responsible manner . . . , " as well as the Names Council's 19 May 2000 recommendations concerning protection for intellectual property during the startup phase of new top-level domains.

Under Article VI, Section 2(e) of the ICANN bylaws,

"the Board shall accept the recommendations of a Supporting Organization if the Board finds that the recommended policy (1) furthers the purposes of, and is in the best interest of, the Corporation; (2) is consistent with the Articles and Bylaws; (3) was arrived at through fair and open processes (including participation by representatives of other Supporting Organizations if requested); and (4) is not reasonably opposed by any other Supporting Organization. No recommendation of a Supporting Organization shall be adopted unless the votes in favor of adoption would be sufficient for adoption by the Board without taking account of either the Directors selected by the Supporting Organization or their votes."

The councils of the Address Supporting Organization and the Protocol Supporting Organization have been advised of both statements of the recommendations of the Names Council. The Address Council concluded that there is no address policy issue of concern in connection with the recommendations. The Protocol Council has not expressed any view on the recommendations.

To allow additional community comment on the Names Council's recommendations, ICANN has established a web-based Public Comment Forum and will devote a portion of the public forum in Yokohama on 15 July 2000 to the issue.

[Click here to enter the Public Comment Forum on Introduction of New TLDs](#)

The following section discusses principles that might be followed in the adoption of new TLDs, and solicits comments on specific aspects of those principles.

II. Suggested Principles for the Introduction of New TLDs

The 18/19 April 2000 Names Council statement recommends that the ICANN Board adopt a policy for the introduction of new TLDs. In adopting such a policy, several principles should be addressed. The following discusses various possible principles and poses questions for which community input is specifically sought. Those questions, of course, are not meant to be limiting and the public is invited to submit comments on all aspects of policies for the introduction of new TLDs.

A. The need to maintain the Internet's stability: a "measured and responsible" introduction.

The U.S. Government's [White Paper](#) identified four principles that should guide ICANN's activities. Of these, the White Paper made clear that ICANN's primary mission is to preserve the stability of the Internet:

"The introduction of a new management system [to replace management by the U.S. Government and its contractors] should not disrupt current operations or create competing root systems. During the transition and thereafter, the stability of the Internet should be the first priority of any DNS management system. Security and reliability of the DNS are important aspects of stability, and as a new DNS management system is introduced, a comprehensive security strategy should be developed."

Introducing new TLDs implies a change in the overall structure of the DNS, and it is therefore appropriate to take care to introduce any new TLDs in a manner that does not endanger stability.

To help ensure that introducing new TLDs does not jeopardize the Internet's stability, the Names Council emphasized that the introduction should be done in a "measured and responsible manner." According to the Names Council, care should be taken to solicit the views of technical standards bodies:

"The Names Council recognizes that any roll-out must not jeopardize the stability of the Internet, and assumes a responsible process for introducing new gTLDs, which includes ensuring that there is close coordination with organizations dealing with Internet protocols and standards."

The Names Council statement also noted that the implementation of a policy for the introduction of new TLDs should give due regard to practical considerations, such as start-up issues (the "land rush" phenomenon of huge query and transaction loads during the first few hours and days of registration) and the possibility that many domain-name disputes would be created. In particular, the Names Council identified:

"(a) promoting orderly registration of names during the initial phases;

"(b) minimizing the use of gTLDs to carry out infringements of intellectual property rights; and

"(c) recognizing the need for ensuring user confidence in the technical operation of the new TLD and the DNS as a whole."

Many have also noted that, as a practical matter, the introduction of new TLDs is not an easily reversible act, since eliminating a TLD (including all domain names registered within it) once it has been created may create significant hardships. For these reasons, some have argued that the TLD introductions should begin with a relatively small group, so that if difficulties arise they are of limited scope and can be effectively addressed before proceeding with additional TLDs.

In view of these considerations, public comment is sought on the following issues:

Q1: In the introduction of new TLDs, what steps should be taken to coordinate with the Internet Engineering Task Force, the Internet Architecture Board, and other organizations dealing with Internet protocols and standards?

Q2: What stability concerns are associated with the initial phases of registration within the TLD?

Q3: What can be done to eliminate or reduce these stability concerns?

Q4: Would these stability concerns be magnified by introducing a large number of TLDs at once?

Q5: Are there any practical means of reversing the introduction of a significant new TLD once it goes into operation?

Q6: Is it feasible to introduce a TLD on a "trial basis," giving clear notice that the TLD might be discontinued after the trial is completed?

Q7: To ensure continued stability, what characteristics should be sought in a proposed TLD and in the organization(s) proposing to sponsor and/or operate it?

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B. A well-controlled, small-scale introduction as a "proof of concept" for possible future introductions.

Recent experience in the introduction of new TLDs is somewhat limited. No new TLD designated as a "generic" TLD has been introduced for over ten years, since before significant commercial use of the Internet began. Although dozens of ccTLDs have been introduced since the onset of commercial use of the Internet in the early 1990s, fewer than 10 of the 245 ccTLDs have

as many as 100,000 registrations within them. In view of the limited recent experience, the Names Council's 18/19 April 2000 statement made the following suggestion:

"[W]e recommend to the Board that a limited number of new top-level domains be introduced initially and that the future introduction of additional top-level domains be done only after careful evaluation of the initial introduction."

Thus, the Names Council recommended that the first group of TLDs introduced serve as a "proof of concept." Although the Names Council did not formally recommend any specific number of new TLDs that should be introduced in the first group, it did indicate that the first group should be used to evaluate the feasibility and utility of a range of different types of TLDs:

"The Names Council takes note of the fact that the WG C report indicates that several types of domains should be considered in the initial introduction, these being: fully open top-level domains, restricted and chartered top-level domains with limited scope, non-commercial domains and personal domains."

This recommendation suggests that choices about the particular TLDs to be added in the first group, as well as the resulting number of TLDs, should be made in a manner that promotes effective evaluation of :

- the feasibility and utility of different types of new TLDs,
- the efficacy of different procedures for launching new TLDs,
- different policies under which the TLDs can be administered in the longer term,
- different operational models for the registry and registrar functions, and
- different institutional structures for the formulation of registration and operation policies within the TLD.

Public comment is therefore sought on the following issues:

Q8: To what extent is the experience gained from introducing gTLDs in the 1980s applicable to present-day circumstances?

Q9: To the extent it is applicable, what are the lessons to be learned from that experience?

Q10: What lessons, if any, can be learned regarding new gTLD introductions from the experience of the ccTLD registries?

Q11: Can lessons relevant to introduction of new TLDs be learned from the recent decisions by a number of them to operate in a globally open manner? If so, what lessons?

Q12: Is the Names Council's recommendation that a "limited number of new top-level domains be introduced initially" a sensible way to minimize risks to Internet stability?

Q13: What steps should be taken to evaluate carefully the initial introduction of TLDs before future introduction of additional TLDs?

Q14: Should a fixed time be established for all the evaluations, or should the time allowed vary depending on the nature of the TLD and other circumstances?

Q15: Should choices regarding the types of TLDs included in the initial introduction seek to promote effective evaluation of:

- the feasibility and utility of different types of new TLDs?
- the efficacy of different procedures for launching new TLDs?
- different policies under which the TLDs can be administered in the longer term?
- different operational models for the registry and registrar functions?
- different institutional structures for the formulation of registration and operation policies within the TLD?
- other factors?

Q16: Should any particular goal for, or limit on, the number of TLDs to be included in the initial introduction be established in advance, or alternatively should the number included in the initial introduction be guided by the extent to which proposals establish sound proofs of concept of varied new TLD attributes?

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C. The purposes for adding new TLDs.

It seems appropriate that the selection of the types of TLDs to be introduced initially reflect an assessment of the purposes for adding new TLDs. In discussions generally within the Internet community over the past several years, as well as in more recent discussions in the DNSO, various advantages of new TLDs have been cited. These advantages can be grouped in three broad categories: enhancement of competition in the provision of registration services, enhancement of the utility of the DNS, and enhancement of the available number of domain names.

1. Enhancing competition for registration services.

One of the main motivations for the change in policy reflected in the White Paper was a "widespread dissatisfaction about the absence of competition in domain name registration." At the time of the White Paper, registrations in the open gTLDs (.com, .net, and .org) were made by a single source (Network Solutions) at a price fixed by its cooperative agreement with the U. S. Government. Although registrations were also available through over 200 ccTLDs worldwide, the overwhelming majority of those ccTLDs were restricted to registrants that were affiliated with the countries involved and the relatively few "open" ccTLDs were not extensively used.

Since the establishment of ICANN in November 1998, the competitive conditions have changed significantly. Beginning in June 1999, competition was introduced at the registrar level for registration services and now 45 different accredited registrars

receive equivalent access to the central registry for .com, .net, and .org. Competition at the registrar level is robust, resulting in prices significantly lower than a year ago and a much larger array of service offerings from which consumers may choose. In addition to this dramatic growth in competition in .com, .net, and .org, competition from the ccTLDs has also increased. Many formerly "closed" ccTLDs have begun to permit registrations by companies not affiliated with their countries; "open" ccTLDs have become more accepted within registrants worldwide.

The encouragement of competition in registration services continues to be a major goal of the Internet community. In its 18/19 April 2000 statement, the Names Council stressed that "[i]mplementation [of new TLDs] should promote competition in the domain-name registration business at the registry and registrar levels."

Although competition has increased markedly in the past year at the registrar level, **the registry** (the authoritative database that maps names within the TLD to IP addresses) for all three "open" gTLDs is still operated by a single company, Network Solutions. This situation limits the effectiveness of overall competition and, even aside from strictly competitive issues, gives rise to concerns over the Internet community's lack of vendor diversity. Some have argued these concerns (competition and vendor diversity) make it appropriate to introduce one or more alternative, fully open, globally available TLDs. Others have argued that these concerns are no longer so pressing as to justify adding new open TLDs. As discussed in detail in point 2 below, they assert that having additional, undifferentiated TLDs would tend to reduce the utility of the DNS by increasing inter-TLD confusion. (E.g., <example.com> would be confused with <example.firm>.)

One concern sometimes raised in this connection is that .com may have become so highly preferred in the market to any other TLD that effective competition among open TLDs is no longer likely. Those raising this concern sometimes point out that .com enjoys a vastly superior market share compared to .net and .org, with .com accounting for 80% of the total registrations in .com, .net, and .org. This predominance of .com registrations continues even though all three TLDs are offered by 45 registrars fiercely trying to sell registrations.

Q17: In view of the current competitive conditions, should the promotion of effective competition in the provision of registration services continue to be a significant motivation for adding fully open TLDs?

Q18: Should the desire for diverse vendors of registry services in open TLDs be an important motivation in adding fully open TLDs?

Q19: Would the introduction of additional undifferentiated TLDs result in increased inter-TLD confusion among Internet users?

Q20: Taking all the relevant factors into account, should one or more fully open TLDs be included in the initial introduction?

Q21: How many?

Q22: How effective would other fully open TLDs be in providing effective competition to .com?

Q23: What can be done to maximize the prospect that new fully open TLDs will be attractive to consumers as alternatives to .com?

Q24: Would the likelihood of effective competition with .com be enhanced by making one or more of the single-character .com domains (which are currently registered to the IANA) available for use as the basis of a third-level registry (i.e. a registry that took registration of names in the form of <example.e.com> or <example.1.com>)? Should the single-character .com domains be made available for possible registry usage in conjunction with the initial group of additional TLDs?

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2. Enhancing the utility of the DNS.

Another motivation frequently cited for introducing new TLDs is that doing so might increase the utility of the DNS. Under this view, the appropriateness of adding new TLDs should be evaluated based on whether addition of the new TLDs:

- would make it easier for Internet users to find the web sites and other Internet resources they are seeking and
- would make it easier for the providers of Internet resources to be found.

This view tends to favor adding special-purpose TLDs and to disfavor adding undifferentiated, open TLDs. To help keep TLDs distinct and meaningful, it has been suggested that TLDs should be given "charters" which define the purposes for which they are intended. These charters are intended to promote the distinctiveness of TLDs over time. Advocates of chartered TLDs note that all the present gTLDs (including .com, .net, and .org) have defined uses, see [RFC 1591](#). The definitions of the uses of .com, .net, and .org, however, have not been enforced since 1996, when it was decided to suspend screening of registrations to reduce delays in processing applications for registration.

The view that enhancement of the utility of the DNS should be a chief goal in introducing new TLDs is reflected by the first three principles outlined in the second additional consensus point of WG-C's 17 April 2000 supplemental report:

"1. Meaning: An application for a TLD should explain the significance of the proposed TLD string, and how the applicant contemplates that the new TLD will be perceived by the relevant population of net users. The application may contemplate that the proposed TLD string will have its primary semantic meaning in a language other than English.

"2. Enforcement: An application for a TLD should explain the mechanism for charter enforcement where relevant and desired.

"3. Differentiation: The selection of a TLD string should not confuse net users, and so TLDs should be clearly differentiated by the string and/or by the marketing and functionality associated with the string."

A few have suggested that these principles (which were approved in WG-C by a vote of 46 yes, 21 no, 1 abstain) preclude the introduction of any new fully open TLDs. These people argue that introducing new unrestricted-use TLDs would not increase the availability of distinctive domain names, but would instead decrease the meaning of domain names generally by encouraging registration of domain names that are distinguished only by unmeaningful TLD labels. While the principles of WG-C's 17 April 2000 supplemental report point strongly toward introducing limited-purpose, distinct TLDs, most of those favoring them urge that they be applied flexibly so as not to rule out the introduction of one or more fully open, undifferentiated TLDs.

Differentiated types of TLDs that have been proposed for introduction under a chartered-TLD approach include:

- restricted-use commercial TLDs, such as .travel (for the travel industry), .movie (for web sites dedicated to particular films), and .banc (for financial institutions).
- TLDs defined by some geographic region, but not qualifying as ccTLDs under current policies.
- a TLD restricted to adult uses (.xxx or .sex).
- TLDs designated for use by particular types of non-commercial organizations, such as .museum and .union. An existing example of this type of TLD is .edu.
- TLDs for use by various affinity groups.
- TLDs intended for advocacy uses, such as .protest.
- a TLD devoted to domains registered by individuals for their personal use.

Some have suggested that differentiated TLDs should be introduced in various systematic ways (e.g., by following a predefined taxonomy). Others have favored introducing each specific TLD according to a proposal by an organization interested in sponsoring the TLD that demonstrates the desire, legitimacy, and resources to introduce and manage the TLD in an appropriate manner.

In view of these considerations, public comment is sought on the following issues:

Q25: Is increasing the utility of the DNS as a resource-location tool an appropriate goal in the introduction of new TLDs?

Q26: Would the introduction of unrestricted, undifferentiated TLDs run counter to this goal?

Q27: If so, are there ways of accommodating the goal of enhancing registry-level competition with the goal of enhancing the utility of the DNS?

Q28: Is the concept of TLD "charters" helpful in promoting the appropriate evolution of the DNS?

Q29: Are the first three principles outlined in the second additional consensus point of WG-C's 17 April 2000 supplemental report (quoted above) appropriate criteria for selecting TLDs to be introduced in the first group?

Q30: Do those principles preclude the introduction of any new fully open TLDs?

Q31: What types of TLDs should be included in the first group of additional TLDs to best test the concept of chartered TLDs?

Q32: Should chartered TLDs be introduced according to a pre-defined system, or should proposals be evaluated on an individualized basis?

Q33: If charter proposals are evaluated on an individualized basis, should any steps should be taken to promote stable and orderly evolution of the DNS overall?

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3. Enhancing the number of available domain names.

A third reason cited for introducing additional TLDs is that doing so would increase the number of domain names available for registration. This rationale is usually based on the premise that "all the good names are already taken" and that adding TLDs would increase the supply of "good" names.

In fact, the number of second-level domain names within a single TLD is quite large (over 10⁹⁸) and claims that any particular TLD is effectively exhausted are, as a technical matter, misplaced. (Even .com has only approximately 10⁸ names registered). Some, however, have noted that the group of useful or desirable names is much smaller than the total theoretically possible. While this observation is correct, even a slight lengthening of possible second-level domain names increases the available possibilities much more dramatically than the addition of new TLDs. For example, under the currently followed format rules increasing second-level domain-name length by one character multiplies the possible domain names by 37, while adding three new TLDs similar to .com, .net, and .org would only double them.

Some participants in the discussion have asserted that adding undifferentiated TLDs for the purpose of increasing the number of available domain names runs counter to the goal of enhancing the distinctness of DNS names. In this view, adding names that differ from existing ones only because they fall into new, undifferentiated TLDs would impair the utility of the DNS. These participants argue that expansion of the DNS name space should not be accomplished by making available additional names that are likely to be confused with existing names, particularly since distinctive TLDs could instead be created.

Q34: Has the inventory of useful and available domain names reached an unacceptably low level?

Q35: Assuming it is important to increase the inventory of available domain names, should that be done by adding TLDs that are not differentiated from the present ones?

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D. Delegation of policy-formulation requirements for special-purpose TLDs.

As envisioned by the White Paper, ICANN is responsible for overall coordination of the DNS. In view of the hierarchical nature of the DNS, however, the responsibility for establishment of policies within TLDs varies depending on the nature of the TLD. Policies for fully open TLDs (such as .com, .net, and .org) are formulated through the ICANN process, which involves participation of all segments of the global Internet community. Policies for other TLDs (such as .edu and the ccTLDs), on the other hand, have been formulated by focused constituencies.

Proponents of limited-purpose TLDs have advocated a "sponsorship" paradigm, in which policy-formulation responsibility for the TLD would be delegated to an organization that allows participation of the affected segments of the relevant communities. The sponsoring organization would have authority to make decisions regarding policies applicable to the TLD, provided they are within the scope of the TLD's charter and comport with requirements concerning interoperability, availability of registration data, and the like intended to ensure that the interests of the overall Internet are served. For example, the TLD .museum might be sponsored by an association of museums and the .union TLD might be sponsored by a group of labor unions. In many respects, the sponsorship paradigm is a generalization of the concepts underlying appointment of managers for ccTLDs under existing ccTLD delegation policy.

According to proponents, the sponsorship paradigm has the advantages of allowing detailed policies for limited-purpose TLDs to be established through an easily manageable process in which those with relevant interests can participate, while allowing the more broadly participatory ICANN process to focus on issues of general interest to the entire Internet community.

Q36: Should the formulation of policies for limited-purpose TLDs be delegated to sponsoring organizations? In all cases or only in some?

Q37: What measures should be employed to encourage or require that a sponsoring organization is appropriately representative of the TLD's intended stakeholders?

Q38: In cases where sponsoring organizations are appointed, what measures should be established to ensure that the interests of the global Internet community are served in the operation of the TLD?

Q39: How should global policy requirements (adherence to a TLD's charter, requirements of representativeness, interoperability requirements, etc.) be enforced?

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E. New TLDs to meet new types of needs.

The 18/19 April Names Council statement recommended that the initial introduction of new TLDs include a variety of types of TLDs. Such a diversity in the initial introduction can provide useful data to determine what types of TLDs should be introduced in the future. In addition, introducing diverse types of special-purpose TLDs provides the opportunity to meet short-term needs for TLDs that are not met by the existing TLDs.

Q40: Are there any types of new TLDs that should not be included in the initial introduction? If any types should be excluded, why?

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F. Start-up challenges and the protection of intellectual property.

The statement adopted by the DNSO Names Council on 18/19 April 2000 urged that, in connection with the implementation of a policy for introducing new TLDs, due regard be given to "promoting orderly registration of names during the initial phases." On 15 May 2000, Working Group B issued its final report, which amplified on the concern that the startup phases of new TLDs can pose special risks to intellectual property and found consensus that some type of mechanism, yet to be determined, is necessary in connection with famous trademarks and the operation of the Domain Name System.

In its statement of 19 May 2000, adopted after considering Working Group B's final report, the Names Council concluded that there is community consensus and recommended that there be varying degrees of protection for intellectual property during the startup phase of new top-level domains.

One method of protecting intellectual property that has been proposed is to prohibit the registration of famous and well-known trademarks. Indeed, the White Paper suggested that ICANN consider adopting "policies that exclude, either pro-actively or retroactively, certain famous trademarks from being used as domain names (in one or more TLDs) except by the designated trademark holder." In its deliberations, Working Group B extensively explored the use of a famous-names list for exclusion and reached consensus that such a list was not necessary or appropriate at the present time. In its 19 May 2000 statement, the Names Council "conclude[d] that there is no consensus in the community at the present time that such a list should be adopted by ICANN." Thus, it seems clear that measures other than a famous-names list for the protection of intellectual property during the start-up phases of new TLDs must be considered.

The Names Council also concluded that different types of TLDs warrant different types of protection for intellectual property. For example, some have reasoned that more protections are appropriate in a commercial TLD than in one designated for non-commercial uses.

Along with its recommendation for varying intellectual-property protections depending on the type of TLD, the Names Council also recommended that, as a minimum, the basic methods for enforcing infringed rights should always apply. In its 19 May

2000 statement, the Names Council recommended that the existing procedures (the UDRP and conventionally available legal proceedings) should apply where a domain name registrant in a chartered TLD violates the charter or other legal enforceable rights.

Concerns over the effectiveness of the UDRP have prompted some in the DNSO Business Constituency to propose that the policy be evaluated and overhauled before any new TLDs are introduced. For example, as of 13 June 2000 the Business Constituency was considering [version 5 of a position paper entitled "A practical approach to new Internet domain names."](#) which (as one option) proposed a multi-phase process under which there would be several prerequisites to the introduction of new TLDs:

"Phase I

"1. Rapidly evaluate the first 12 months operation of the Uniform Dispute Resolution Process (implemented 24 October 1999), and subject to a conclusion that it has been successful in meeting its objectives, proceed to phase II.

"2. Extend the UDRP wef 1st October 2000 to evaluate claims for ownership transfer based on the relevance of a well-known trademark to a charter gTLD. Once implemented proceed to phase II.

"Phase II

"Introduce new gTLDs in a gradual but systematic way as outlined above, testing each proposed gTLD against the principles."

Based on the likely implementation schedule (see below), it is the assessment of the ICANN staff that such a phased approach would result in a delay in the introduction of new TLDs of nine months or more.

Q41: Does the start up of a new TLD pose additional risks to intellectual property rights that warrant additional protections?

Q42: Should the protections afforded intellectual property in the start-up phase of new TLDs differ depending on the type of TLD?

Q43: Is the availability of the UDRP and court proceedings as remedies for violations of enforceable legal rights an appropriate element of protection of intellectual-property rights that should apply to all new TLDs? Are there any other protections that should be made available in all new TLDs, regardless of their type?

Q44: Does the start up of a new TLD pose difficulties for those other than intellectual property owners that should be addressed through special procedures?

Q45: What mechanisms for start up of a new TLD should be followed to ensure that all persons receive a fair chance to obtain registrations?

Q46: Is exclusion of names appearing on a globally famous trademark list a workable method of protecting such marks from infringement at the present time? Would an exclusion mechanism be appropriate in the future?

Q47: Should introduction of new TLDs await completion of an evaluation of the operation of the UDRP and be subject to a finding that the UDRP has been successful in meeting its objectives? How long would such an evaluation likely take to complete?

Q48: Should introduction of new TLDs await extension of the UDRP to cover claims for transfer of domain names based on the relevance of a well-known trademark to a chartered gTLD? How long would implementing such a revision to the UDRP likely take?

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III. Suggested Schedule for the Introduction of New TLDs

The following is a draft schedule for the initial introduction of new TLDs:

13 June 2000 - Initial Postings and Drafts:

- Background.
- Suggested Principles for the Introduction of New TLDs
- Suggested Schedule for the Introduction of New TLDs
- Suggested Data Elements to Be Sought from Organizations Applying to Sponsor or Operate TLDs
- Call for Statements of Interest in Proposing a New TLD

In conjunction with these postings, a web-based public comment forum is established to receive comments on the introduction of new TLDs.

15 July 2000 - ICANN Public Forum, Yokohama

A portion of the Yokohama agenda will be devoted to policies and timelines for the introduction of new TLDs. The public forum is an opportunity for public comment and dialogue, either in person or through the webcast's online remote participation tools.

16 July 2000 - ICANN Board meeting, Yokohama

The ICANN Board will consider the Names Council's 18/19 April 2000 recommendation that the Board adopt "a policy for the introduction of new gTLDs in a measured and responsible manner . . .," as well as the Names Council's 19 May 2000 recommendations concerning protection for intellectual property during the startup phase of new top-level domains.

1 August 2000 - Call for Proposals

ICANN will issue a formal call for proposals, accompanied by a New TLD Registry Application Form, instructions for filling out the application, and a statement of criteria for the Board's eventual decision.

It is proposed that the New TLD Registry Application Form include the elements shown in [Part IV below](#). Because ICANN will seek heterogeneity and diversity in applicants' TLD models, none of the data elements should be read to restrict or preclude a particular TLD proposal. Comments about these proposed application elements should be posted in the public comment forum.

1 October 2000 - Deadline for Proposals

All proposals received by the 1 October deadline will be made public on the ICANN website as to the data elements in [I](#) and [III](#) described in [Part VI below](#). Proposals will be posted when received, rather than waiting until 1 October to post. Comments on the proposals will be solicited through the public comment forum that will be created for that purpose. No additional proposals will be accepted after this date.

8 October 2000 - Deadline for Public Comments on Proposals

This deadline will ensure that at least 1 week is available for public comments on all proposals; to the extent that proposals are received prior to 1 October, the comment period will be longer for those proposals.

1 November 2000 - Announcement of Decision

ICANN will announce the decision as to the first group of new TLDs to be added to the DNS root.

1 December 2000 - Completion of Registry Contracts

Deadline for ICANN and the selected registry applicants to sign and publish the new registry contracts.

In connection with the foregoing suggested schedule, public comment on the following topics is especially solicited:

Q49: Does the schedule allow sufficient time for formulation of proposals?

Q50: Does the schedule allow sufficient time for public comment?

Q51: Should all proposals be posted for comment simultaneously to maintain equal time for public comment? Should all proposals be posted for public comment as they are received to allow the greatest possible time for public analysis and comment?

Q52: Should the formal applications be posted in full for public comment? If not, which parts of the applications should remain private?

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IV. Suggested Data Elements to Be Sought from Organizations Applying to Sponsor or Operate TLDs

The following is a general proposal for the data elements that should be requested of those proposing to operate or sponsor new TLDs. The actual application would likely require more detail as to these elements:

I. Information about the Proposed TLD

A. Proposed TLD label (i.e., the string of letters identifying the TLD, such as .com, .net, .org, etc.)

Questions for public comment:

Q53: Should proposals choose a single proposed TLD or numerous possibilities?

Q54: Should ICANN select the TLD labels, should they be proposed by the applicants for new TLD registries, or should they be chosen by a consultative process between the applicants and ICANN?

Q55: Should there be minimum or maximum length requirements for TLD codes? Are restrictions appropriate to avoid possible future conflicts with ISO 3166-1 codes?

Q56: Should there be restrictions on the types of TLD labels that are established (for example, a prohibition of country names)?

Q57: What should be the criteria for selecting between potential TLD labels? Should non-English language TLD labels be favored?

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B. Type of TLD, such as but not limited to:

1. Unrestricted (e.g., .com)

2. Unrestricted with definition or semantic meaning, but no enforcement (e.g., .org)
3. Restricted to a particular class of registrants or particular uses ("sponsored" or "chartered", e.g., .edu)

Questions for public comment:

Q58: How many new TLDs of each type should be included in the initial introduction?

Q59: Which types of TLDs will best serve the DNS?

Q60: Are there any types of TLDs that ICANN should not consider?

Q61: Which types, if any, are essential to the successful testing period?

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C. In the case of a restricted TLD, the mechanisms proposed to make the restrictions effective

D. Requirements for domain name registrants in the Proposed TLD

E. Purpose, mission, justification for the TLD

1. What (if anything) will distinguish the proposed TLD from existing or other proposed TLDs?
2. What market will be served or targeted?
3. How would introduction of the TLD enhance the utility of the DNS?
4. For unrestricted TLDs: What will be the value to the broader Internet community? Will the TLD seek to provide competition with existing TLD registries?
5. For restricted TLDs: What will be the value to the specific community or market to be served?

F. Why should the proposed TLD be included in the initial introduction of TLDs?

1. What concepts are likely to be proven/disproven by evaluation of the introduction of this TLD?
2. By what criteria should the success or lack of success of the TLD be evaluated?
3. Are there any reasons, other than the desire to evaluate the introduction process, for including the TLD in the initial introduction?

Question for public comment:

Q62: Which other structural factors, if any, should ICANN consider in determining the potential success of a specific TLD proposal?

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G. Naming conventions within the TLD (i.e. will registrants register second-level domain names, or will the TLD be organized into sub-domains?)

II. Information about the Proposed Sponsor and Operator of the TLD

A. Company/organization information

1. Company or organization name
2. Address
3. Business locations/offices
4. Names of officers, directors, and executives
5. Annual report or similar document
6. Current business operations
7. Past business operations and experiences
8. Qualifications and experience of financial and business officers
9. Qualifications and experience of technical officers

Questions for public comment:

Q63: Should ICANN accept proposals from companies formed/forming for the purpose of operating or sponsoring a new TLD? If so, how should ICANN determine the competence of the company?

Q64: If a company has significant operational or policy positions not yet filled, how should ICANN evaluate the level of competence of officers and employees?

Q65: How should ICANN evaluate the competence of officers and employees?

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B. Registry business model

1. Capitalization of registry
2. Sources of capital
3. Revenue model (i.e. for-profit or cost-recovery?)
4. Business plan
5. Allocation of registry/registrar functions
 - a. How will registration services be provided to registrants (i.e. through a single registrar, selected registrars, all ICANN-accredited registrars, or some other model)?
 - b. Relationship of registry to ICANN-accredited registrars
6. Proposed registration fees

Questions for public comment:

Q66: How much capital should be required? Should it be a fixed amount or should it vary with the type of proposal and the sufficiency of the business plan? How should the sufficiency of capital be evaluated?

Q67: Should ICANN seek diversity in business models as well as TLD types? Which, if any, business models are essential to a successful evaluation phase?

Q68: What measures should be in place to protect registrants from the possibility of a registry operator's business failure?

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C. Technical capabilities

1. Physical plant
 - a. Hardware
 - b. Software
 - c. Facility security
2. Data security and escrow
3. Scalability and load capacity
4. Registry-to-registrar technical and other support
5. Registrar-to-registrant technical and other support
6. Billing and collection operations

Question for public comment:

Q69: What should be the minimum technical requirements to ensure sufficient stability and interoperability?

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III. Information about the Policies and Procedures Applicable to the TLD

A. Unrestricted TLDs

1. Basic TLD policies (how do they differ from the policies applicable to .com, .net, and .org)?
2. Policies for selection of, and competition among, registrars
3. Measures for protection of intellectual property rights
4. Procedures for start-up phase of TLD
5. Dispute-resolution procedures

Questions for public comment:

Q70: How should ICANN evaluate the sufficiency of proposed intellectual property protections?

Q71: What role should ICANN have in the start-up procedures for new unrestricted TLDs?

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B. Sponsored/chartered/restricted TLDs

1. Basic TLD policies
2. Criteria for registration
 - a. Enforcement procedures and mechanisms
 - b. Appeal process from denial of registration
3. Policies for selection of, and competition among, registrars
4. Measures for protection of intellectual property rights
5. Procedures for start-up phase of TLD
6. Dispute-resolution procedures
 - a. Intellectual-property disputes
 - b. Charter issues

Question for public comment:

Q72: In what ways should the application requirements for sponsored/chartered/restricted TLDs differ from those for open TLDs?

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C. Allocation of policymaking responsibilities

1. Is a sponsoring organization proposed to receive policymaking responsibility for the TLD? Or will policies all be made through the ICANN process?
2. If some policies are to be made by the sponsoring organization, on what subjects?
3. Relationship of registry operator to policymaking body (i.e. which organization decides which policies?)
4. Policymaking procedures (i.e. how would future changes in registration or registrar policies be made?)
5. Openness, transparency, and representativeness of policymaking process
 - a. Selection of policy makers
 - b. Types of stakeholders represented in the policy-formulation process

Questions for public comment:

Q73: Should ICANN require a statement of policy or should a statement of how policies will be made be sufficient?

Q74: What level of openness, transparency, and representativeness in policymaking should ICANN require?

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V. Call for Statements of Interest in Proposing a New TLD

In its 18/19 April 2000 statement concerning new TLDs, the Names Council stated:

"To assist the Board in the task of introducing new gTLDs, the Names Council recommends that the ICANN staff invite expressions of interest from parties seeking to operate any new gTLD registry."

In accordance with that recommendation, the ICANN staff invites expressions of interest from parties seeking to operate and/or sponsor any new TLD registry. Expressions of interest should be brief (generally no more than ten pages) but descriptive. All submissions should include self-identification, brief description of the structure and purpose of the proposed TLD, and an indication of the likelihood of submitting a formal application for the proposed TLD.

Although those who submit expressions of interest will neither be advantaged nor disadvantaged in the formal application process, as suggested by the Names Council statement the expressions will be used to assist the formulation of appropriate policies concerning the consideration of formal applications.

Please send expressions of interest in electronic form to tld-interest@icann.org. All submissions should be suitable for public posting.

EXHIBIT JZ-35



Report (Part One) of Working Group C (New gTLDs) Presented to Names Council

(21 March 2000)

Report (Part One) of Working Group C

This document is Part One of the Report of Working Group C. It sets out the rough consensus of the group regarding whether there should be new generic top-level domains (gTLDs), and if so, how quickly they should be added to the root as an initial matter.

Introduction and summary

Working Group C has reached rough consensus on two issues. The first is that ICANN should add new gTLDs to the root. The second is that ICANN should begin the deployment of new gTLDs with an initial rollout of six to ten new gTLDs, followed by an evaluation period. This report will address each of these issues separately. For each of the issues, it will summarize the discussions within the working group, arguments pro and con, and comments received from the public. It will then briefly summarize the ongoing work of the group.

Procedural and outreach history

The Names Council approved the charter of Working Group C on June 25, 1999, and named Javier Sola (Business constituency) as its chair. On July 29, the working group members elected Jonathan Weinberg co-chair. The working group includes extensive representation from each of the constituencies. It is open to anyone who wishes to join, and currently has about 140 members, many of whom are inactive. (For most of the life of the working group, no NSI representative participated. When WG-C's co-chair solicited greater participation from the Registry constituency, Don Telage explained that NSI had chosen not to involve itself in the WG-C process. That representational gap has been filled now that Roger Cochetti and Tony Rutkowski, WG-C members from the start, have joined NSI in senior policymaking capacities.)

On October 23, 1999, the Working Group released its Interim Report. That report described the issues on which the Working Group had reached rough consensus to date. It also included seven "position papers," setting out alternative scenarios for the introduction of new gTLDs. Those position papers usefully illustrate alternate approaches to expanding the name space, and address a broader range of issues than does this Report; they are available at <http://www.dnso.org/dnso/notes/19991023.NCwgc-report.html>.

On November 23, 1999, the Names Council formally requested public comment on the Interim Report. This call for comments was publicized on a variety of

mailing lists maintained by the DNSO, including ga-announce, ga, and liaison7c (which includes the constituency secretariats). In addition, WG-C's co-chair spoke at the meetings of most of the constituencies at the Los Angeles ICANN meeting, and urged constituency members to file comments. Nearly 300 comments were filed in response to the interim report. They included responses from leading members of all of the constituencies but two - the record does not include comments from the ccTLD or Registry constituencies (although ccTLD members participated in the discussions that led to the Interim Report, and WG-C's co-chair expressly solicited the comments of both of those groups).

The initial draft of this report was circulated to the working group on March 2, 2000, and the report was presented to the Names Council on March 8. The working group approved this revised version of the report in a vote that closed on March 20.

Issue One - Should There Be New gTLDs?

Discussions within the working group

The working group quickly -- by mid-July, 1999 -- reached consensus that there should be new global top-level domains. There was very little dissent from this position.

Arguments supporting the consensus position

Expanding the number of TLDs will increase consumer choice, and create opportunities for entities that have been shut out under the current name structure. Today, .com stands astride the name space: it has more registrations than all other top-level domain names combined, and is ten times the size of the largest ccTLD. Yet it has become nearly impossible to register a new simple domain name there: Almost a year ago, in April 1999, a survey found that of 25,500 standard English-language dictionary words, only 1,760 were free in the .com domain.

This situation is undesirable. It requires companies to register increasingly unwieldy domain names for themselves, and is inflating the value of the secondary (speculators') market in .com domain names. Existing second-level domain names under the .com TLD routinely change hands for enormously inflated prices. These are legitimate trades of ordinary, untrademarked words; their high prices reflect the artificial scarcity of common names in existing gTLDs, and the premium on .com names in particular. The inflated value of the speculators' market imposes additional costs on businesses making defensive registrations of domain names.

Companies that currently have a domain name in the form of company.com have an extremely important marketing and name-recognition tool. They have an advantage over all other companies that do not have addresses in that form, because the companyname.com firms are the ones that consumers, surfing the Net, will be able to find most easily. If the name space is expanded, companies will be able to get easy-to-remember domain names more easily, and the entry barriers to successful participation in electronic commerce will be lowered.

Addition of new gTLDs will allow different companies to have the same second-level domain name in different TLDs. Those businesses will have to compete based on price, quality and service, rather than on the happenstance of which company locked up the most desirable domain name first.

Similarly, addition of new gTLDs could enlarge noncommercial name space, and allow the creation of top-level domains designed to serve noncommercial goals. One proposal made in WG-C, widely applauded in the public comments, advocated the creation of a new top-level domain to be operated by North American indigenous peoples. Other examples are easy to imagine.

Creation of new generic top-level domains can be beneficial in other respects. One proposal before WG-C, with significant support, urges the creation of multiple registries, each capable of managing registrations for multiple TLDs, so as to eliminate the single point of failure for the registration process. Under this view, multiple new gTLDs are necessary to support the multiple registries needed for stability.

Adding new gTLDs to the root, finally, is an important part of ICANN's mandate. ICANN was created because the institutions that preceded it were unable to resolve the intense political and economic conflicts created by demand for new top-level domain names. The U.S. Department of Commerce's White Paper saw the establishment of policy "for determining the circumstances under which new TLDs are added to the root system" as one of ICANN's fundamental goals.

Arguments opposing the consensus position

Three arguments were made in WG-C that cut against the addition of new gTLDs. First, some working group members suggested that the perceived need for new gTLDs was illusory. Public commenters raising this issue included Bell Atlantic and Marilyn Cade.

Second, some working group members suggested that an increase in the number of top-level domains could confuse consumers, because it would be harder for consumers to keep in mind and remember a larger set of top-level domains. Accordingly, any increase in the number of new gTLDs should be cautious. Notwithstanding requests, though, no working group member offered studies or other evidence backing up this view.

Finally, some working group members raised trademark policing concerns: Expansion of the domain space will create additional opportunities for the registration of domain names that are confusingly similar to existing trademarks. It will present a risk that bad actors will seek to confuse consumers by registering SLD strings identical to those registered by others in other TLDs. It will likely increase trademark owners' policing costs and the costs of defensive registrations.

The relationship between domain names and trademark rights presents an important and difficult issue, and is appropriately addressed by registry data maintenance requirements, dispute resolution mechanisms such as the UDRP, and any other device that ICANN may choose to adopt, as well as by national

legislation. Trademark owners' concerns in this regard are important ones, and not to be overlooked. In public comments on the Interim Report, a substantial number of commenters urged that deployment should be delayed until after implementation of the uniform dispute resolution procedure, improved domain name registration procedures, and adoption of a system for protecting famous marks. They included, among others, Jonathan Cohen (then an NC member, IPC), Dr. Victoria Carrington, AOL, British Telecom, Disney, INTA, Nintendo of America and Time Warner. Steven Metalitz expressed a similar view: "New gTLD's should be inaugurated only when, and to the extent that, established and proven procedures are in place in the existing gTLD's to improve the quality and accessibility of registrant contact data, as well as satisfactory dispute resolution procedures." The comments of the WG-C Rapporteur of the Business & Commercial constituency urged, on behalf of the constituency, that "business requirements such as the effective implementation of the UDRP and international business practices such as jurisdictional domains" should be addressed satisfactorily before new gTLDs are deployed. The Software and Information Industry Association noted its support for adding new gTLDs, but only after the creation of a robust, responsive whois system.

Other commenters, by contrast, do not believe that trademark-related concerns justify delay in the introduction of new gTLDs. These included Hirofumi Hotta (NC member, ISPCPC) (emphasizing that discussion of famous-mark protection should not delay the gTLD rollout), Kathryn Kleiman (NC member, NCDNHC), Michael Schneider (NC member, ISPCPC), Computer Professionals for Social Responsibility, Melbourne IT, AXISNET (Peruvian Association of Users and ISPs), the United States Small Business Administration's Office of Advocacy, Register.com, InterWorking Labs, Tucows.com, InterAccess Company and PSI-Japan. Raul Echeberria (then an NC member, NCDNHC) filed comments urging that the establishment of new gTLDs was important and positive, but that rules should be devised to avoid massive speculative purchases of domains in the new TLDs, or trademark holders simply duplicating their existing domains.

Within the working group, the argument that ICANN should impose substantial delays on the initial deployment of new gTLDs in the interest of adopting or perfecting trademark- protective mechanisms won little support except from Intellectual Property constituency members.

Public comments

The discussion above canvasses many of the public comments received. By far the largest set of comments, however, addressed a specific implementation of the principles discussed above. Nearly 180 commenters (a majority of the comments filed) supported the creation of a particular proposed new domain: .NAA, proposed as a new gTLD to be run by North American indigenous peoples.

Issue Two - What Should be the Nature of the Initial Rollout?

Discussions within the working group

In working group discussions, members of the working group initially expressed

sharply varying positions on the nature of the initial rollout. Some working group members urged that ICANN should immediately announce its intention to authorize hundreds of new gTLDs over the course of the next few years. While ICANN might interrupt that process if it observed serious problems with the rollout, the presumption would be in favor of deployment to the limits of the technically feasible and operationally stable. If ICANN simply deployed a small number of new gTLDs with no commitment to add more, they argued, the public would have to make registration decisions based on the possibility that the small number of new gTLDs would be the only options. This would give the new registries oligopoly power and the ability to earn greater-than-competitive profits; it would encourage pre-emptive and speculative registrations based on the possibility of continued artificial scarcity. By contrast, they urged, an ICANN decision to deploy a large number of gTLDs would enable competition and a level playing field: If ICANN announced an intention to add hundreds of new gTLDs over a three-year period, no new registry could exercise market power based on the prospect of a continued artificial scarcity of names.

Other working group members took the opposite approach. New gTLDs, they urged, could seriously aggravate the problems facing trademark rightsholders in the existing domain name space. Accordingly, they urged, new gTLDs should be introduced only slowly and in a controlled manner, and only after effective trademark protection mechanisms had been implemented and shown to be effective.

A third set of working group members took still another approach. In the long term, they stated, it would be desirable for ICANN to allow the deployment of new gTLDs to the limits of the technically feasible and operationally stable. As a short-term matter, however, the immediate deployment of hundreds of new TLDs would not be prudent. The operationally safer course, rather, should be to deploy a smaller number, and to follow that deployment with an evaluation period during which the Internet community could assess the initial deployment. ICANN would go on to deploy additional TLDs if no serious problems arose in the initial rollout.

The proposal that ICANN start by deploying six to ten new TLDs, followed by an evaluation period, was crafted as a compromise position to bridge > the gap separating the three groups, and to enable a rough consensus to form > in the middle ground.

In September 1999, the WG-C co-chairs made the determination that the working group had reached rough consensus supporting the compromise position. Because there had been no formal consensus call, though, the working group held a vote in December 1999 to reaffirm that consensus. Following the lead of Working Group B, the working group determined in advance that a two-thirds margin would constitute adequate evidence of rough consensus. The vote reaffirmed the "six to ten, followed by an evaluation period" compromise position as the rough consensus of the working group, by a margin of 44 to 20. (A substantial number of working group members did not cast votes. In addition, some working group members, having been solicited to vote, sent messages to the list explaining that they were declining to take a position at that time, and listed themselves as consequently abstaining. Neither the non-voters nor the abstainers were counted in figuring the two-thirds majority.)

Arguments supporting the consensus position

The "six to ten, followed by an evaluation period" consensus position has the advantage of being a compromise proposal supported by a wide range of working group members. In a bottom-up, consensus-driven organization, broad agreement on a policy path is valuable for its own sake. The sense of the bulk of the working group is that this proposal strikes an appropriate balance between slower, contingent deployment of new gTLDs and faster, more nearly certain, deployment.

Arguments opposing the consensus position

Three arguments were made in the working group against the proposal. The first was that the contemplated initial deployment was too large; rather, some WG members urged, it would be appropriate, following the implementation of effective intellectual property protections, for ICANN to roll out no more than two or three new gTLDs. The second argument was that the contemplated initial deployment was too *small*: that, as detailed above, a deployment of only six to ten, without an upfront commitment to roll out many more, will be a half-measure that would grant oligopoly power to the lucky registries selected for the initial rollout.

Commenters expressed agreement with each of these positions: Bell Atlantic and Marilyn Cade supported the introduction of just a single new gTLD at the outset; British Telecom and Time Warner urged the initial rollout of only a few. The submission of the WG-C Rapporteur of the Business & Commercial constituency, on behalf of that constituency, urged that ICANN should start with a "very small number" of new gTLDs. Other commenters, including Jonathan Cohen (then an NC member, IPC), Dr. Victoria Carrington, AOL, Disney and Nintendo of America, generally endorsed the statement that the introduction of new gTLDs should be slow and controlled, and should incorporate an evaluation period.

By contrast, Hirofumi Hotta (NC member, ISPCPC), Kathryn Kleiman (NC member, NCDNHC), Michael Schneider (NC member, ISPCPC), Computer Professionals for Social Responsibility, AXISNET, InterWorking Labs, Tucows.com and InterAccess Company supported the position that ICANN should, at the outset, announce a schedule for introducing hundreds of new TLDs. The Office of Advocacy, U.S. Small Business Administration concluded that ICANN should start with a limited introduction of new TLDs followed by an evaluation period, but that ICANN should announce in advance that it would continue with a steady introduction of additional TLDs so long as pre-announced technical criteria were met. Raul Echeberria (then an NC member, NCDNHC) stated that ICANN should evaluate the operation and market acceptance of the TLDs added in the initial rollout before creating or announcing more. Melbourne IT, PSI-Japan and Register.com all supported the compromise position of an initial rollout of six to ten new gTLDs followed by an evaluation period.

Most WG members concluded that a deployment of fewer than 6-10 would not give ICANN the information that it would need to make sensible later decisions,

and was smaller than caution dictated. At the same time, most WG-C members felt that an initial commitment to many more than 6-10 would not be operationally sound. Until we see the consequences for the domain name space of adding new gTLDs, there are advantages to a more circumspect path.

The final objection raised was that the consensus agreement answered the wrong question: The working group, said some, should not be addressing the number of new gTLDs at all before resolving such issues as whether the new top-level domains should be general-purpose (like .com), special-purpose, or some combination of the two. These issues are discussed in this report under the heading of "ongoing work," and certainly it would not have been inappropriate for the WG to have sought to reach conclusions on those matters before discussing Issue Two. But most members of the working group concluded that the size of the initial rollout could and should be addressed first, before resolving less tractable issues.

Ongoing work

Remaining questions before the working group include how the new gTLDs deployed in the initial rollout, and their associated registries, should be selected. In initial discussion and straw polls on this issue, working group members fell into several camps. One group urged that ICANN should first select new gTLD strings, and only then call for applications from registries wishing to operate those TLDs. A second group urged that ICANN should select new gTLD registries on the basis of objective criteria, and allow the registries to choose their own gTLDs in response to market considerations. A third group suggested that registries should apply describing their proposed gTLDs, and that an ICANN body or process would then make selections taking into account the characteristics of both the registry and its proposed gTLD. The working group considered the third option, viewed as a possible middle ground, as a consensus call, relating only to the initial rollout of six to ten new gTLDs.

Thirteen "yes" votes were cast in that consensus call, and five "no" votes. While the votes cast were markedly in favor, it's the view of the co-chair that a finding of rough consensus, at this date, would be premature. Only a small number of people voted: In contrast to the 64 votes cast on the consensus call relating to the size of the initial deployment (well over half of the membership of the WG at the time), only eighteen people chose to cast a vote on this matter. Even some active participants in the discussion of the consensus call did not cast votes. This makes the vote less reliable as a gauge of the views of the working group as a whole. Other factors making it difficult to draw an unambiguous consensus from the vote include the facts that some of those who voted "yes" added additional caveats conditioning their support, and that voters may have had varying understandings as to how the term "registry" in the consensus call should be understood, and what an application would entail. ("No" voters urged both that the consensus proposal would give too much discretionary authority to ICANN, and that it would preclude ICANN from considering gTLD proposals that came from entities other than would-be registries.)

It appears to be the sense of the working group, among both supporters and opponents of the consensus call, that ICANN's selection process should be

procedurally regular and guided by pre-announced selection criteria. Further, it appears to be the sense of the working group that the namespace should have room for both limited-purpose gTLDs (which have a charter that substantially limits who can register there) and open, general-purpose gTLDs. The working group extensively discussed a set of eight principles, drafted by Philip Sheppard (NC member, Business) and Kathryn Kleiman (NC member, NCDNHC), against which applications for new TLDs might be judged. The proposed principles, in their current iteration, incorporate the keywords Certainty, Honesty, Differentiation, Competition, Diversity, Semantics, Multiplicity and Simplicity. However, the working group has not so far achieved a consensus on the content or usefulness of the principles.

Conclusion

In summary, Working Group C has reached rough consensus on two issues. The first is that ICANN should add new gTLDs to the root. The second is that ICANN should begin the deployment of new gTLDs with an initial rollout of six to ten new gTLDs, followed by an evaluation period. The working group is continuing to address other issues, including the mechanism through which new gTLDs and registries should be selected. While there is sentiment within the working group for the compromise position that registries should apply describing their proposed gTLDs, and that an ICANN body or process should make selections taking into account the characteristics of both the registries and their proposed gTLDs, a finding of rough consensus on this point would be premature.

Appendix

As of Sun Mar 19 2000 the number of subscribers to the WG-C lists is 147 (wg-c 139 and wg-c-digest 8)

The following is the tally of votes on the December 1999 consensus call on "six to ten, followed by an evaluation period":

YES: Lutts, Andersson, Broich, Conant, Ambler, Simon, Tamulioniene, Crocker, Maher, D. Lee, Brunner, Maxon, Lubsen, Feld, Penman, Parker, Becar, Shrewsbury, Broomfield, Weinberg, Teernstra, Friedman, Auerbach, Vestal, Stubbs, Chon, Langston, Measday, Barry, Mueller, Koslowski, Garrin, Stahura, Nesson, Lindsay, Wesson, Connelly, Dixon, Meyer, Rader, Langenbach, Denton, Staub, Walsh.

NO: Renard, Lupo, Dooley, Broxton, Chicoine, Porteneuve, Semich, Lewis, Gymer, Connolly, Cade, Schwimmer, Hooker, Palage, Ross, Rindforth, Sheppard, Odin, Pollard, Cohen.

ABSTAIN: Froelich, Echeberria, Park

NOT VOTING: Rutkowski, Abril, Andersson, Kennedy, Burton, Schmidt, Rosenblatt, E. Lee, Duca, Dalman, Kowack, Singh, Pope, Sola, Neuman, Glanz, Giannandrea, Zehr, Englund, Crispin, Taylor, Loo, Sportack, Schneider, Rosmarin, Chung, Saraf, Robles, Gregson, Hall, Waters, Cochetti, S. Lee, Goodman, Leader, Yurderi,

Newell, Monroe, Kang, Janiaud

The following is the tally of votes on the March 2000 consensus call on "registries should apply describing their proposed gTLD":

YES: Ambler, Mueller, Connolly, Alvestrand, Dawson, Dixon, Schutt, Connelly, McCarthy, Vienneau, Walsh, Measday, Garvey.

NO: Langston, Auerbach, Crispin, Brunner, Rindforth.

No abstainers, NON-VOTERS too numerous to list

The following is the tally of votes on approving this report and transmitting it to the Names Council:

YES: McCarthy, Barry, Crocker, Measday, Dawson, Brunner, Love, Pollard, Linares, Penman, Auerbach, Wesson, Walsh, Langston, Rader, Garrin, Ambler, Semich, Broomfield, Meyer, Teernstra, Simon, Parker, Shrewsbury, Dixon, Feld, Langenbach, Friedman, Alvestrand, Kamantauskas, Becar, Elliott, Greenwell, Maher, Vestal, Vienneau, Fausett, Schuckman, Connolly, Kleiman, Campbell, Connelly, Kelsey, Taylor.

NO: Rindforth, Lupo, Rothnie, Sheppard, Winer, Gymer, Lewis, Garvey, Cade, Chicoine.

No abstainers

NOT VOTING: A. Andersson, A.-C. Andersson, Renard, Dooley, Kennedy, Blich, Broxton, Pelling, Conant, Schmidt, Tamulioniene, Pare, Rosenblatt, D. Lee, Edler, Porteneuve, E. Lee, Froelich, Collingion, Duca, Dalman, Nolan, Kowack, Lubsen, Pope, Seng, Sola, Trexler, Yap, Giannandrea, Zehr, Weinberg, Stubbs, Cartwright, Crispin, Chon, Kroon, Nelmidia, Loo, Schwimmer, Palage, Schneider, Mueller, Rosmarin, Chung, Saraf, Neuman, Robles, Stahura, Echeberria, Nesson, Lindsay, Hall, Waters, Cochetti, S. Lee, Goodman, Ellis, Denton, Yurderi, Newell, Bradley, Staub, Monroe, Donaldson, Tsuneo, (j.eder@berkom.de), Gregson, Keller, (zehl@berkom.de), (ajay.joshi@utoronto.ca), Lutts, Watt, Ross, Schutt, (etienne@telebot.net), (faia@amauta.rcp.net.pe), Vogelstein, Murakoshi, (jothan@nic.cc), Wheeler, Janiaud, Prescott, Kozlowski, Otagaki, (tinwee@pobox.org.sg), Donaldson, Park

A detailed summary of the public comments on the working group's Oct. 23, 1999 interim report is available at <http://www.dnso.org/wgroups/wg-c/Arc01/msg00490.html>.

Jonathan Weinberg
co-chair, WG-C
(weinberg@msen.com)

Comments concerning the layout, construction and functionality of this site
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Page Updated 13-May-00

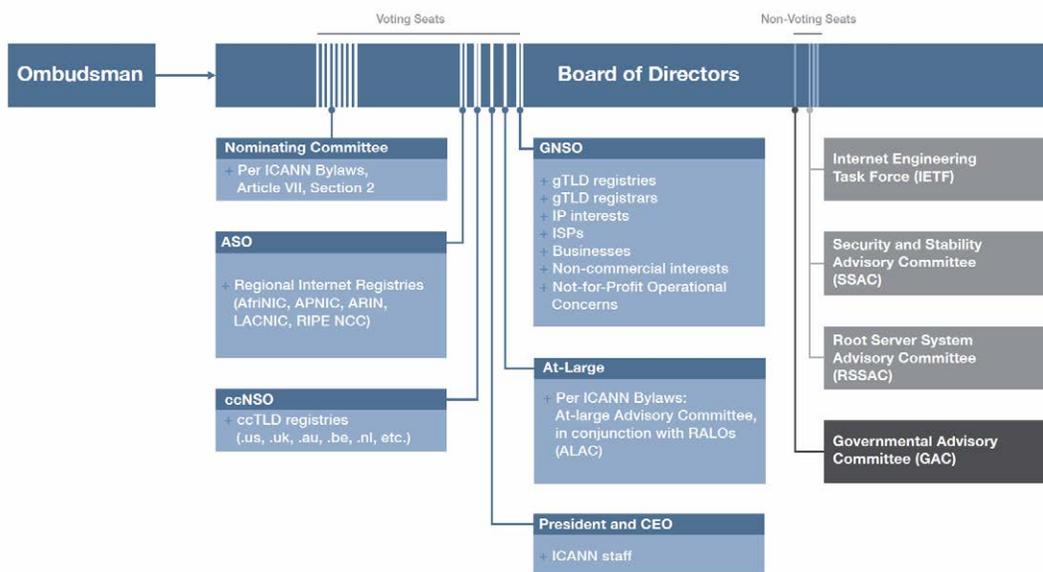
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EXHIBIT JZ-36



Resources

Groups



Because ICANN tackles complex problems, it depends on the support of many different types of groups and sub-structures: Advisory Committees, Supporting Organizations, standing committees, working groups, review teams, task forces, and more.

This page provides a starting point for finding work product (such as minutes, resolutions, and reports) from various structures within [ICANN](#). You'll also find background on some groups, and links to the web pages of various groups.

Click in the left navigation column, or on the headings below, to visit the following resources.

[Board](#). Pictures and bios of current and former Directors; information on Board committees; Board Statements of Interest, and more.

[ASO](#). Official website of the [Address Supporting Organization](#).

[ALAC](#). Official website of the [At-Large Advisory Committee](#) and the At-Large community, the voice of the individual user in [ICANN](#).

[ccNSO](#). Official website of the [Country Code Names Supporting Organization](#).

[GAC](#). Official website of the [Governmental Advisory Committee](#).

[GNSO](#). Official website of the [Generic Names Supporting Organization](#).

[IETF](#). Specifies the formal communication channel between [ICANN](#) and the Internet Engineering Task Force.

[NomCom](#). Web page for the Nominating Committee, an independent group tasked with selecting eight members of the [ICANN](#) Board of Directors and other key positions.

[RSSAC](#). Web page dedicated to the [Root Server System Advisory Committee](#), recording their meetings and formal statements.

[SSAC](#). Official web page of the [Security and Stability Advisory Committee](#).

[Technical Liaison Group](#). Links related to this group, which connects the [ICANN](#) Board with appropriate technical advice on specific pertinent matters.

[Other Groups](#). Links to the [IDN Variants Working Group](#), the [Technical Relations Working Group](#), the [CEO Search Committee](#), and other presidential committees and Board working groups as they form.

[Past Groups](#). Links to committees and task forces that are currently closed, listed in reverse chronological order from 2010 back to 1998.

[Organizational Reviews](#). Information related to periodic reviews of the

performance and operation of each Supporting Organization and Advisory Committee.



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EXHIBIT JZ-37

DNSO Names Council Statement on new gTLDs

19 April 2000

DNSO Names Council Statement on new gTLDs

The Names Council determines that the report of Working Group C and related comments indicate that there exists a consensus for the introduction of new gTLDs in a measured and responsible manner. The Names Council therefore recommends to the ICANN Board that it establish a policy for the introduction of new gTLDs in a measured and responsible manner, giving due regard in the implementation of that policy to (a) promoting orderly registration of names during the initial phases; (b) minimizing the use of gTLDs to carry out infringements of intellectual property rights; and (c) recognizing the need for ensuring user confidence in the technical operation of the new TLD and the DNS as a whole.

Because there is no recent experience in introducing new gTLDs, we recommend to the Board that a limited number of new top-level domains be introduced initially and that the future introduction of additional top-level domains be done only after careful evaluation of the initial introduction. The Names Council takes note of the fact that the WG C report indicates that several types of domains should be considered in the initial introduction, these being: fully open top-level domains, restricted and chartered top-level domains with limited scope, non-commercial domains and personal domains. Implementation should promote competition in the domain-name registration business at the registry and registrar levels. The Names Council recognizes that any roll-out must not jeopardize the stability of the Internet, and assumes a responsible process for introducing new gTLDs, which includes ensuring that there is close coordination with organizations dealing with Internet protocols and standards.

To assist the Board in the task of introducing new gTLDs, the Names Council recommends that the ICANN staff invite expressions of interest from parties seeking to operate any new gTLD registry, with an indication as to how they propose to ensure to promote these values.

We would like to extend our deep appreciation to the substantial number of participants who worked so diligently in Working Groups B and C, and want to thank them for their significant efforts in evaluating the issues that were referred to them. Recognizing the Working Group C has recently approved additional principles and that Working Group B's formal report was provided to us yesterday, we advise the Board that we will be providing supplemental recommendations in the near future.

EXHIBIT JZ-38



Criteria for Assessing TLD Proposals

15 August 2000

Criteria for Assessing TLD Proposals

ICANN expects to receive many applications to sponsor or operate new top-level domains (TLDs). In this year's application program, it is likely that only a few of these will be selected by the ICANN Board for negotiations toward registry sponsor and operator agreements. To the extent possible, as this process continues ICANN will provide additional guidance on the likely number of TLDs to be included.

The ICANN staff is responsible for gathering information about submitted applications, evaluating the applications and associated information, and making recommendations to the Board based on the applications, associated information, and evaluations. In its evaluations, the ICANN staff currently intends to consider at least the factors described below. Applicants are invited to **be creative** and to explain the value of their proposals in the context of these and any other relevant factors.

1. The need to maintain the Internet's stability.

ICANN's [first priority is to preserve the stability of the Internet](#), including the domain-name system (DNS). Proposals should demonstrate specific and well-thought-out plans, backed by ample, firmly committed resources, to operate in a manner that preserves the Internet's continuing stability. The introduction of the proposed TLD should not disrupt current operations, nor should it create alternate root systems, which [threaten the existence of a globally unique public name space](#). Security and reliability of the DNS are important aspects of stability, and proposals should set forth comprehensive strategies to assure both.

ICANN will undertake a wide-ranging assessment of a proposal's treatment of stability issues. Among the significant aspects of stability ICANN will review are:

- a. The prospects for the continued and unimpaired operation of the TLD in the manner proposed by the registry operator or sponsor throughout the period for which the delegation is agreed;
- b. Provisions to minimize unscheduled outages of registry or registration systems due to technical failures or malicious activity of others;
- c. Provisions to ensure consistent compliance with technical requirements in operation of the TLD;

- d. Effects of the new TLD on the operation and performance of the DNS in general and the root-server system in particular;
- e. Measures to promote rapid correction of any technical difficulties that occur (whether or not due to the TLD's operation), such as availability of accurate, consistent, and helpful Whois information;
- f. The protection of domain-name holders from the effects of registry or registration-system failure, such as procedures for rapid restoration of services from escrowed data in the event of a system outage or failure; and
- g. Provisions for orderly and reliable assignment of domain names during the initial period of the TLD's operation.

2. The extent to which selection of the proposal would lead to an effective "proof of concept" concerning the introduction of top-level domains in the future.

Recent experience in the introduction of new TLDs is limited in some respects. The current program of establishing new TLDs is intended to allow the Internet community to evaluate possible additions and enhancements to the DNS and possible methods of implementing them. Stated differently, the current program is intended to serve as a "proof of concept" for ways in which the DNS might evolve in the longer term.

Proposals should be chosen so as to promote effective evaluation of :

- the feasibility and utility of different types of new TLDs,
- the effectiveness of different procedures for launching new TLDs,
- different policies under which the TLDs can be administered in the longer term,
- different operational models for the registry and registrar functions,
- different business and economic models under which TLDs can be operated;
- the market demand for different types of TLDs and DNS services; and
- different institutional structures for the formulation of registration and operation policies within the TLD.

This factor will be best served by applications that clearly articulate what concept or proposition the proposal would test, how the results of that test should be evaluated, and how the results of the evaluation would assist in the long-range management of the DNS.

3. The enhancement of competition for registration services.

As noted in the White Paper, market mechanisms that support competition and consumer choice should, where possible, drive the management of the DNS. One of ICANN's core principles is the encouragement of competition at both the registry and registrar levels. Though the market will be the ultimate arbiter of competitive merit, the limited number of new TLDs to be introduced at this time makes it appropriate to make a preliminary evaluation of competitive merit for the "proof of concept."

A proposal's contributions to enhancement of competition can take various forms, depending on the specifics of the proposal. Depending on the characteristics of the TLD proposed, the nature and degree of competition involved may vary. Proposals will be evaluated to determine whether they are responsive to the general goal of enhancing competition for registration services.

Some examples of competitive issues that may be considered in evaluating proposals are:

- a. What prospects do the proposed TLD and registry have for effectively competing with other TLDs and registries (either pre-existing or introduced at the same time)? Are the proposed pricing and service levels likely to be competitive with other TLDs and operators having significant market shares? If effective marketing is necessary to make the TLD competitive, does the proposal adequately provide for that marketing? If the proposal is for an unrestricted TLD, are any features proposed to maximize the prospect that the TLD will be attractive to consumers as an alternative to .com?
- b. Is the proposal particularly attractive to a significant sub-market in which it can compete effectively? Are distinctive services being proposed that will meet the needs of those not being served adequately by existing services?
- c. Is there any significant competitive concern that the proposed TLD is likely to lead to lock-in of domain-name holders, so that inter-TLD competition is constrained? To the extent there is a concern about constrained competition, what measures are proposed or available to ensure competitive operation of the TLD (periodic rebidding of registry, etc.)?
- d. What effect would the proposal have on registrar-level competition? Does the proposal restrict the ability of accredited registrars to offer registration services within the TLD on competitive terms? What mechanism is proposed for selecting registrars?
- e. If accredited registrars are not permitted to offer registration services within the TLD on a competitive basis, are there other, effective mechanisms for providing competitive choices to domain-name holders seeking to register within the TLD?
- f. Would the proposal advance competitive frontiers by introducing an innovative use of the DNS?
- g. Would restrictions proposed for a restricted TLD impair (either in principle or in implementation) competition among potential registrants?

4. The enhancement of the utility of the DNS.

One motivation often cited for introducing new TLDs is that doing so might increase the utility of the DNS. Under this view, the appropriateness of adding new TLDs should be evaluated based on whether addition of the new TLDs:

- would sensibly add to the existing DNS hierarchy and
- would not create or add to confusion of Internet users in locating the Internet resources they seek.

At least the following considerations will be considered in this regard:

a. If the TLD is intended for a particular use or purpose, does the TLD label suggest that use? Is this true for a large portion of Internet users globally (i.e. in different languages)?

b. Is the proposed TLD semantically "far" from existing TLDs, so that confusion is avoided? (For example, TLD labels suggesting similar meanings might be more easily confused.) Is it phonetically distinct from existing TLDs? Meanings and pronunciations in different languages may be relevant to these inquiries.

c. Does the proposed TLD avoid names reserved by RFCs (or documents that are nearly RFCs), notably ".local" (from the [HTTP State Management draft](#)) and those names listed in [RFC 2606](#).

d. In the case of a restricted TLD, is the restriction one that will assist users in remembering or locating domain names within the TLD? (E.g., users might conclude that "ford.car" is associated with the automobile company, not the modeling agency.)

5. The extent to which the proposal would meet previously unmet types of needs.

The DNS should meet a diversity of needs. Close examination will be given to whether submitted proposals exhibit a well-conceived plan, backed by sufficient resources, to meet presently unmet needs of the Internet community.

6. The extent to which the proposal would enhance the diversity of the DNS and of registration services generally.

One goal of introducing new TLDs should be to enhance the diversity of the DNS and the manner in which registration services are provided. In examining submitted proposals, consideration will be given to the diversity the proposal would add to the DNS. Among the diversity of proposals sought, ICANN hopes to receive proposals for fully open top level domains, restricted and chartered domains with limited scope, noncommercial domains, and personal domains. Diversity in business models and of geographic locations are also advantageous. (Note that this criterion must be judged based on the whole group of selected proposals, rather than any single proposal.)

7. The evaluation of delegation of policy-formulation functions for special-purpose TLDs to appropriate organizations.

As noted in the ICANN-staff-prepared document entitled "[ICANN Yokohama Meeting Topic: Introduction of New Top-Level Domains](#)," the [DNS is a hierarchical system](#) that facilitates delegation of policy-formulation authority for particular TLDs. In the context of unsponsored TLDs, this can appropriately be accomplished for many operational matters by giving the registry operator flexibility in the registry contract. For restricted TLDs, some have suggested a "sponsorship" model, in which policy-formulation responsibility for the TLD would be delegated to a sponsoring organization that allows participation of the affected segments of the relevant communities. Proposals will be analyzed to determine whether they offer the opportunity for meaningful, real-world evaluation of various structures for appropriate delegation of policy-formulation responsibilities, as well as evaluation of various allocations of policy-formulation responsibilities between ICANN and sponsoring organizations.

8. Appropriate protections of rights of others in connection with the operation of the TLD.

In introducing new TLDs, care should be taken to ensure that the rights of third parties are appropriately protected. Examples of matters to be examined in this regard include:

- a. Does the proposal have a well-thought-out plan for allocation of names during the start-up phase of the TLD in a way that protects the legitimate interests of significant stakeholders, including existing domain-name holders, businesses with legally protected names, and others with which conflict is likely?
- b. Does the proposal provide for a reasonably accessible and efficient mechanism for resolving domain-name disputes?
- c. Has the proponent considered intellectual property interests or otherwise designed protections for third-party interests?
- d. Does the proposal make adequate provision for Whois service that strikes an appropriate balance between providing information to the public regarding domain-name registrations in a convenient manner and offering mechanisms to preserve personal privacy?
- e. Does the proposal incorporate policies that are likely to discourage abusive registration practices?

9. The completeness of the proposals submitted and the extent to which they demonstrate realistic business, financial, technical, and operational plans and sound analysis of market needs.

The ICANN staff intends to place significant emphasis on the completeness of the proposals and the extent to which they demonstrate that the applicant has a thorough understanding of what is involved, has carefully thought through all relevant issues, has realistically assessed the business, financial, technical, operational, and marketing requirements for implementing the proposal, has procured firm commitments for all necessary resources, and has formulated sound business and technical plans for executing the proposal. Applicants are strongly encouraged to retain well-qualified professional assistance (e.g.,

technical, engineering, financial, legal, marketing, and management professionals, as appropriate) in formulating their proposals. Proposals that are presented in a clear, substantive, detailed, and specific manner will be preferred.

Comments concerning the layout, construction and functionality of this site should be sent to webmaster@icann.org.

Page Updated 15-August-00.

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EXHIBIT JZ-39



TLD Applications Lodged

(2 October 2000)
(corrected through 10 October 2000)

As of 5:00 pm California time on Monday, 2 October 2000, application materials seeking to operate or sponsor the new TLDs listed below were submitted to ICANN. These applications have not yet been verified to be complete or to be in proper form. (There may be missing parts of the application, omitted attachments, no or an inadequate application fee, a transmittal not in the specified form, a lack of required signatures, etc.) Requests for confidential treatment of material submitted have not yet been evaluated according to the procedure outlined in [Section I of the Statement of Requested Confidential Treatment of Materials Submitted](#). Nor has ICANN yet made any determinations, where multiple TLD strings are included in a single application, whether to [require the applicant to elect which of the strings to pursue in the application](#).

The procedure that will be used by ICANN to review these materials is described in the [TLD Application Review Procedure](#).

TLD String(s) (as listed in Item E2 of the Description of TLD Policies)			Applicant(s) (as listed in Item A2 of the Sponsored TLD Application Transmittal Form or Item B1 of the Un-sponsored TLD Application Transmittal Form)
.ads	.gallery	.records	Name.Space, Incorporated 11 East 4 th Street, Second Floor New York, New York 10003 USA +1 212 677 4080 info@name-space.com
.agency	.games	.school	
.aids	.gay	.service	
.air	.graphics	.sex	
.antiques	.group	.shoes	
.art	.guide	.shop	
.artists	.hotel	.show	
.auction	.help	.security	
.audio	.history	.society	
.bbs	.index	.sound	
.books	.insurance	.shareware	
.cafe	.jazz	.site	
.cam	.jobs	.software	
.card	.lab	.solutions	
.cars	.mad	.soup	
.center	.mag	.space	
.city	.magic	.sports	
.channel	.mail	.star	
.church	.market	.studios	
.club	.media	.sucks	
.commerce	.men	.systems	

<p>.computers .consulting .culture .design .digital .direct .dtv .dvd .factory .fashion .festival .fiction .film .films .foundation .free .fun .fund .funds</p>	<p>.monitor .movie .music .news .now .nyc .one .online .opera .page .partners .people .planet .politics .power .productions .projects .properties .radio</p>	<p>.tech .temple .theater .time .times .toys .trade .travel .voice .war .watch .weather .women .world .writer .zine .zone</p>	
<p>.africa .llc .sansansan .sex .three33 .wap .xxx other portions of application claimed confidential</p>	<p>Rathbawn Computers Limited 7826 Lone Pine Drive, Golden, Colorado 80402 USA -and- 5 Badham Street Dickson, ACT 2602 Australia</p> <p>Edward Sweeney +61 2 6257 6758 +61 2 6262 8511 ed@totalnic.com</p> <p>Vincent Hamm +1 303 271-1288 vince@totalnic.com</p>		
<p>.air (also mentioned .aer and .aero, though not under item E2)</p>	<p>Société Internationale de Télécommunications Aéronautiques 14, avenue Henri Matisse 1140 Brussels, Belgium +32 2 745 01 05</p> <p>26, Chemin de Joinville PO Box 31 1216 Geneva, Switzerland +41 22 747 60 00 rosa.delgado@sita.int</p>		
<p>.biz</p>	<p>JVTeam, LLC 1120 Vermont Avenue., NW Washington, DC 20005 USA Ken Hansen</p>		

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.co-op .coop	Cooperative League of the USA dba National Cooperative Business Association 1401 New York Avenue, NW, Suite 1100 USA Washington, D.C. 20005-2160 Paul Hazen +1 202 383-5444 ncba@ncba.org
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EXHIBIT JZ-40



Report on TLD Applications: Application of the August 15 Criteria to Each Category or Group

(9 November 2000)

B. APPLICATION OF THE AUGUST 15 CRITERIA TO EACH CATEGORY OR GROUP

The evaluation team applied the August 15 Criteria to all of the applications on a group-by-group basis. The evaluation of each individual application is contained in Appendix B.

1. General-Purpose TLDs

a. General Group

The fourteen applications that could best be described as "general" are set forth in the following table:

Applicant	Strings Requested
Abacus America, Inc.	.biz, .cool, .fam, .inc, .xxx
Affinity Internet, Inc.	.biz, .ebiz, .firm, .inc
Afilias, LLC	.info, .site, .web
Commercial Connect, LLC	.mall, .shop, .svc
Diebold Incorporated	.cash, .global, .secure
Dubai Technology, Electronic Commerce and Media Free Zone Authority	.dubai, .go
Eastern Communications Company Limited	.firm, .game, .inc, .info, .ltd, .news, .shop, .store, .tour
iDomains, Inc.	.biz, .ebiz, .ecom
Image Online Design, Inc. (dba Web Registry)	.web
JVTeam, LLC	.biz
KDD Internet Solutions Co., Ltd.	.biz, .home
Name.Space	.ads, .agency, .aids, .air, .antiques, .art, .artists, .auction, .audio, .bbs, .books,

	.café, .cam, .card, .cars, .center, .city, .channel, .church, .club, .commerce, .computers, .consulting, .design, .digital, .direct, .dtv, .dvd, .factory, .fashion, .festival, .fiction, .film, .films, .foundation, .free, .fun, .fund, .funds, .gallery, .games, .gay, .graphics, .group, .guide, .hotel, .help, .history, .index, .insurance, .jazz, .jobs, .lab, .mad, .mag, .magic, .mail, .market, .media, .men, .monitor, .movie, .music, .news, .now, .nyc, .one, .online, .opera, .page, .partners, .people, .planet, .politics, .power, .productions, .projects, .properties, .radio, .records, .school, .service, .sex, .shoes, .shop, .show, .security, .society, .sound, .shareware, .site, .software, .solutions, .soup, .space, .sports, .star, .studios, .sucks, .systems, .tech, .temple, .theatre, .time, .times, .toys, .trade, .travel, .voice, .war, .watch, .weather, .women, .world, .writer, .zine, .zone
NeuStar, Inc.	.dot, .info, .site, .spot, .surf, .web
Rathbawn Computers Limited	.africa, .llc, .sansansan.sex, .three33, .wap, .xxx

As a threshold matter, the evaluation team applied the first and the last of the August 15 Criteria to these applications. Early consideration of these criteria was thought necessary to promote efficient review and evaluation of the application pool, to understand the fundamentals of the applications, and to ascertain what additional steps were appropriate for further review. The first criteria, maintaining the Internet's stability, generally requires applications to "demonstrate specific and well-thought-out plans, backed by ample, firmly committed resources, to operate in a manner that preserves the Internet's continuing stability." The last criteria places significant emphasis on the completeness of the applications and the extent to which the applications demonstrate that the applicant has a thorough understanding of, and has carefully thought through, all relevant issues, has realistically assessed the business, financial, technical, operations, and marketing requirements for implementing the application, has procured firm commitments for all necessary resources, and has formulated sound business and technical plans for executing the application. Especially for applications seeking this type of string where a poorly managed or failed registry could have significant commercial or other consequences, the potential effects on stability and the demonstration of the resources necessary to manage a large global unrestricted registry seem critical preconditions to the grant of an application, especially in this "proof of concept" stage.

The applications were reviewed for completeness and demonstrated soundness and feasibility from technical and business-process perspectives, as required by the first and last criteria. The business/financial team and the technical team identified those applications that in their judgment did not demonstrate² realistic business, financial, technical, and operational plans or sufficient resources based on the factors described in Part II.B.2. or from a technical or business-process perspective did not, in the judgment of the evaluation team, demonstrate these factors as persuasively as other proposals for the same or similar TLD string.

As a result of this review, the evaluation team concluded that the following applications merited further review:

Applicant	Strings Requested	Preferred String
Afilias, LLC	.info, .site, .web	.web
Diebold Incorporated	.cash, .global, .secure	[not apparent from application]
iDomains, Inc.	.biz, .ebiz, .ecom	.biz
Image Online Design, Inc.	.web	.web
JVTeam, LLC	.biz	.biz
KDD Internet Solutions Co., Ltd.	.biz, .home	.biz
NeuStar, Inc.	.dot, .info, .site, .spot, .surf, .web	.web

The technical team concluded that some of the applications assigned to this group did not merit further review because they did not demonstrate realistic technical and operational plans on various grounds. Some of the applications did not demonstrate relevant technical expertise. Some applications did not

demonstrate the technical ability to operate a TLD targeting a large group of potential registrants and end users with high reliability. In others, the proposed technical plan did not support the proposed business plan in one or more areas, including under-specification of total capacity, projected growth rate, startup period, fault tolerance, or security. A summary of the conclusions of the technical team with respect to each of these applications is set forth in Appendix B.

The business/financial team concluded that some of the other applications assigned to the general group did not merit further review because they did not demonstrate realistic business or financial plans on various grounds. Several of the applicants submitted an incomplete or weak business plan. Some of the applicants had little or no relevant business or registry/database/Internet experience. Many of these applications did not demonstrate that the operator had sufficient capital and resources, or would commit sufficient capital or resources, to meet the forecasted requirements. In others, the marketing plan and promotion strategy did not appear reasonable and well thought out for the TLD(s) requested and lacked detail. A summary of the conclusions of the business/financial team with respect to each of these applications is set forth in Appendix B.

Again, we emphasize here that these judgments were comparative. A decision not to proceed past the initial threshold examination of any particular application was not necessarily a judgment that either the applicant or its proposal had no merit, or could never qualify under other circumstances. At this "proof of concept" stage, the evaluation process was focused on identifying a finite, relatively small number of strong applications that could serve the purpose of this effort -- to authorize the inclusion in the root server system of a relatively small number of diverse TLD strings in a way that allowed the Internet community to evaluate the effects (if any) on the DNS of additional TLDs and that would minimize to the extent possible any possible disruption of or instability in the DNS as a result of the addition of multiple new TLDs.

Note about Image Online Design

Both the business/financial team and the technical team each independently concluded after the threshold review that the application from Image Online Design, Inc. did not justify further evaluation. However, because of the large number of favorable comments in the ICANN Public Comment Forum, the ICANN staff requested that the evaluation team examine Image Online Design's application more closely in the evaluation process.

Operation of a large registry will require substantial technical and managerial resources. A failure of a new TLD to service the global community of registrars and registrants could fatally damage its reputation and the likelihood of its successful adoption by the public, and therefore its ability to be a vigorous competitor with .com. It could also seriously damage public confidence in new TLDs that could be introduced in the future.

Image Online Design proposes to operate a very large registry that will compete directly with .com. Currently, Image Online Design's registry operation is very modest (20,000 names) and, not being part of the DNS root, experiences little traffic.

In its application, Image Online Design identified the need for a staff of approximately 70 during its first year of operation. (Although this staff size is larger than other large domain applicants proposed, this appears to be because Image Online Design will act as both registry and registrar initially.) Image Online Design identified only three employees who would form the core competency team of the expanded company. Only one of the "core" employees has technical experience. The principal experience of the other two, the CEO and the COO, is in the operation of auto dealerships; their experience in technical management and operations comes from their experience at Image Online Design's currently modest registry operation. Image Online Design's proposal describes a hiring plan to fill other executive positions. Its proposed staffing plan for other personnel is premised on recruiting from colleges located in the vicinity of San Luis Obispo, California. In contrast, other applicants explicitly identified mature, capable teams and large pools of managerial and technical talent to draw upon. Image Online Design proposes to support both registry and registrar functions during the first year,³ including during the start-up period. It has proposed no demand throttling mechanism to control initial load from the expected "land rush" during this period.

In the judgment of the technical team, the small pool of talent available to Image Online Design is a very serious deficiency in Image Online Design's proposal. Given the lack of identified technical and management resources, the technical evaluation team concluded that there is a very significant risk that Image Online Design will not be able to react quickly to unpredictable surges in demand, especially during the critical startup period. A failure to service a global customer base on a 24x7 basis, particularly during the initial startup period, could fatally damage the reputation of the new TLD.

The business/financial team concluded that there were significant deficiencies in the business plan submitted by Image Online Design, particularly compared to other applications in this group. First, Image Online Design expects to obtain a 15 to 23 percent market share of all new registrations in the very first quarter of operation, even with additional competition from other new top-level domains. It assumes one third of these applications will be for prepaid registrations of five to ten year increments at a combined registry/registrar price of \$35 per name per year. This combination creates a very large influx of money to finance operations, with Image Online Design's cash balance increasing from \$450,000 to \$37.4 million in three months at the 50 percent confidence level, which is 83 times larger. The need for this influx presumably is the motivation for Image Online Design's insistence on being the sole registrar during startup. Nonetheless, the business/technical team does not believe these projections are realistic. Second, according to the pro-forma financial statements, Image Online Design will act as the registry and the sole registrar for the entire first year. Even by the end of the fourth year, after other registrants have been permitted to compete for three years, Image Online Design estimates that it will still obtain a 30 percent registrar market share within the TLD, and that it will do so with a \$20.00 registrar markup. This is inconsistent with experience in .com, .net and .org.

Despite this new competition, moreover, Image Online Design anticipates maintaining its \$15 registry price throughout the forecast period. This is at least two and a half times the registry prices anticipated by others in this category.

This higher price is likely to deter registrars and potential registrants. In addition, with any new venture there are always many unknown factors that will occur. For this category, becoming a viable competitor within the existing structure is key. Holding only \$450,000 is a significantly weaker capital position than the capital positions of the other applicants. Finally, based upon its historical experience, Image Online Design has not demonstrated the ability to grow, even when performing other services such as web hosting and design. Overall, the other applications in this group are significantly more realistic and would result in much more viable competition for the .com registry.

Note about Diebold

Because Diebold Corporation's request for confidential treatment of large portions of its application was not resolved until after the end of the threshold review, its application also proceeded to the second review. When Diebold and the ICANN staff were unable to reach agreement on its request for confidential treatment, Diebold elected to withdraw significant portions of its application, including its pro forma financial statements.

Viewed in the light of this withdrawal, there were many serious issues identified in Diebold's application. In the judgment of the technical team, the Diebold proposal, when compared with the other proposals in this group, provided virtually no information about the organization that would actually operate the registry. Specifically, the proposal lacked information on how the Diebold technical team would be staffed, resumes of the principal managers, where registry operation would fit in the Diebold organization, and how additional software would be provided. This lack of information made it difficult for the technical team to assess how the registry operator would deal with surprises not anticipated in Diebold's business plan.

The business/financial team concluded that Diebold's application did not include a thorough analysis of the target market or a detailed marketing plan. The application did not provide a sufficient rationale for the estimated demand or the resources to meet that demand. Without such details, Diebold's application was not complete enough to demonstrate an understanding of what is involved in operating a registry business. The business/financial team concluded that Diebold's application was not as strong as the other applications that merited further review.

Note about NeuStar

NeuStar, Inc. and Melbourne IT are associated with a number of applications for new TLDs as members of JVTeam. JVTeam submitted proposals for the .biz TLD, as well as the .per TLD. In addition, NeuStar submitted a separate application for the .web TLD. After receipt of NeuStar's application, ICANN asked NeuStar to identify the proposed registry operator and, if not NeuStar, to provide the information about the proposed registry operator required in the Registry Operator's Proposal. In answer to the question, NeuStar stated that it is "fully capable and unconstrained from operating the registry and in delivering all that is included in the .web proposal." In its answer, NeuStar also indicated its preference, if awarded .web, to implement and operate the TLD with full support from JVTeam, which it suggested would be accomplished by the assignment of

the registry operator's agreement to JVTeam after the award. The evaluation team evaluated NeuStar's application with the understanding that JVTeam would, on some basis, be involved in the operation of the registry, as indicated throughout NeuStar's application.

Subsequently, on November 8, 2000, NeuStar sent a letter to ICANN informing ICANN that NeuStar would not assign or subcontract the operations of the registry to JVTeam. During the short period of time between ICANN's receipt of NeuStar's letter and the posting of this report, the evaluation team has attempted, to the extent possible, to re-evaluate the application with NeuStar as the registry operator without any participation by JVTeam or Melbourne IT.

The evaluation team concluded that lack of participation by Melbourne IT may negatively affect NeuStar's application. Some specific concerns identified by the team are included in the summary of NeuStar's application found in Appendix B. However, given the short period of time since the receipt of NeuStar's letter and given the difficulty of extracting Melbourne IT's participation and contribution from NeuStar's application, the evaluation team is, at this juncture, unable to completely assess that impact. Work on this analysis is continuing.

Comparison

Having applied the first and last of the August 15 Criteria to these applications as a threshold matter, the evaluation team evaluated how each of the August 15 Criteria should be applied to proposals for these TLDs in light of the diversity in purpose and targeted markets reflected in the categorization. The evaluation team concluded that the August 15 Criteria apply as follows:

August 15 Criteria	Application to General Group
The need to maintain the Internet's stability	Generally applies
The extent to which selection of the proposal would lead to an effective "proof of concept" concerning the introduction of top-level domains in the future	Applies primarily with respect to the process of introducing a large top-level domain and to the issue of the effectiveness of inter-TLD competition for general-purpose TLDs
The enhancement of competition for registration services	Generally applies
The enhancement of the utility of the DNS	Applies primarily with respect to appropriateness of the TLD label, avoidance of confusion of TLDs, and the extent to which the TLD will aid users
The extent to which the proposal would meet previously unmet types of needs	Generally does not apply to the introduction of a large top-level domain
The extent to which the proposal would enhance the	Generally applies

diversity of the DNS and of registration services generally	
The evaluation of delegation of policy-formulation functions for special-purpose TLDs to appropriate organizations	Generally does not apply
Appropriate protections of rights of others in connection with the operation of the TLD	Generally applies
The completeness of the proposals submitted and the extent to which they demonstrate realistic business, financial, technical, and operational plans and sound analysis of market needs	Generally applies

Stability, enhancement of competition, proof of concept and enhancement of diversity seem particularly relevant to analysis of these TLDs.

Stability

The threshold review concluded that all of the applicants, except Image Online Design and Diebold, presented proposals that appear to provide for stable operation of the proposed TLD. For the reasons summarized above, the proposals presented by Image Online Design and Diebold do not address significant stability concerns, potentially leading to early registry disruption or failure. These events in a large TLD, if they transpired, would significantly impair DNS stability.

Enhancement of Competition and Proof of Concept

The market will be the ultimate arbiter of the competitive merit of any new TLD. The evaluation of whether proposals for a new TLD will enhance competition for registration services, therefore, should focus on the realistic prospects of the proposed TLD and registry for effectively competing with other TLDs and registries and should include such factors as the adequacy of marketing and promotion plans, the competitiveness of the proposed services, pricing and service levels with other TLDs and operators having significant market share, and restrictions on accredited registrars.

Introduction of a new general purpose TLD is a concept to be tested, as is the effectiveness and character of inter-TLD competition between .com and newly introduced TLDs. In general, market mechanisms that support competition and consumer choice should, where possible, drive the management of the DNS. See *United States Department of Commerce White Paper*, at <<http://www.icann.org/general/white-paper-05jun98.htm/Principle2>>. One of ICANN's core principles is the encouragement of competition at both the registry and the registrar level. Because of the limited number of new TLDs to be introduced at this time, it is appropriate to make a preliminary evaluation of competitive "proof of concept."

In order to have a realistic prospect of effectively competing with .com (which as of September, 2000 contains approximately 20 million domain names and appears to continue to grow at an exponential rate) and to provide an effective proof of concept, a general purpose TLD applicant must realistically assess the business, financial, technical, operational, and marketing requirements for implementing the proposal and procure firm commitments for necessary resources. Some of the significant factors in evaluating whether these TLDs have a realistic prospect of competing with other TLDs and registries having significant market share are summarized in the following table:

Applicant	Expected Cumulative Number of Registrations (Year 4)	Capital Investment	Registry Operator's Marketing Budget(Year 1 - 4)	Number of Registry Operator Employees (Year 4)
iDomains, Inc. (.biz)	12.0M	\$1.0M	\$29.2M	35
JVTeam, LLC (.biz)	3.85M	\$72.5M	\$28.0M	68
KDD Internet Solutions Co., Ltd. (.biz)	21.1M	\$8.4M	Not apparent from application	43
Diebold Incorporated (.cash, etc.)	No response ⁴	No response	No response	No response
Afilias, LLC (.web)	16.2M	\$4.8M	\$76.7M	69
Image Online Design, Inc. (.web)	3.8M	\$450K	\$103.1M	184
NeuStar, Inc. (.web)	11.1M	\$46.3M	\$35.4M	122

As the table indicates, wide variations exist among these applicants, including among those seeking the same TLD (.biz or .web). Expected demand⁵ in year 4 for a .biz TLD ranges from 3.85 million to 21.1 million registrants and for a .web TLD from 3.8 million to 16.2 million. In comparison, at the end of September, 2000, .com had approximately 20 million registrations. If those applicants forecasting a smaller demand for a general purpose TLD like .biz or .web are correct, these general TLDs may provide less effective competition to .com than would a general TLD with a larger market demand.

Among those applicants forecasting a larger demand, the initial equity investment also varies widely. Some of the variations may be explained in part because some applicants propose leveraging existing infrastructure, including outsource partners, while others must build the infrastructure.

Even accounting for the stated reasons for the variations in investment levels, the table indicates that applicants like JVTeam, Afilias and NeuStar appear willing to devote significant resources to operate a large TLD to effectively compete with .com.

Due to the widely varying number of registrations and capital investment, the potential rate of return also varies widely. The rate of return can generally be determined by comparing the initial capital investment with the estimated future cash flow. In this situation, the applicants were not asked to provide a lengthy cash flow projection. Consequently, a representative comparison cannot be reasonably made. This is especially true because many of the applicants anticipate several years of investment prior to becoming profitable. Nevertheless, the data provided in the application does provide some indication about the potential return. The table below outlines (i) the cumulative net income for the years one through four, (ii) the capital investment and (iii) the ratio of cumulative net income to capital investment of each of the applicants (except Diebold, which withdrew its pro forma financial statements).

Applicant	Cumulative Net Income (Years 1-4)	Capital Investment	Cumulative Net Income/Capital Investment
iDomains, Inc. (.biz)	38.50M ⁶	1.0M	3,850%
JVTeam, LLC (.biz)	-88.97M ⁷	72.5M	-123%
KDD Internet Solutions Co., Ltd. (.biz)	22.80M	8.4M	271%
Afilias, LLC (.web)	-12.80M	4.8M	-267%
Image Online Design, Inc. (.web)	53.30M	0.45M	11,844%
NeuStar, Inc. (.web)	-58.00M ⁸	46.3M	-125%

Generally, the lower the capital investment, the greater the potential return and vice versa. Two applicants, iDomains and Image Online Design, are not planning on investing significant capital into the new venture. Consequently, the ratio of cumulative net income to capital investment is extremely high. Alternatively, the JVTeam and NeuStar applications are anticipating investing significant sums, thereby requiring a greater number of periods to recoup their investment.

Another factor promoting effective competition with .com is enhanced service content, particularly with respect to the registry interface protocol. Many applicants proposed changes to the current registry/registrar protocol (RRP) developed by Verisign. Generally, the primary changes suggested by the applicants relate to model and content. The current RRP might be referred to as a "thin" protocol in which the registry is provided with the bare minimum of information required to perform its function and the registrars retain full

information on registrants. In particular, the Whois service is provided by the registrars. Many applicants proposed various "thick" registry protocols where the registry would be the repository for most or all of the registrant data. There are several potential advantages to this approach: the Whois function is centralized and can be better managed, the stored data takes advantage of the registry's more robust storage structure, and registrar facilities are simplified, enabling broader registrar-level competition.

The second type of change raised by applicants suggesting changes to the current RRP relates to the type of information that might be stored. Many applicants propose that the registry interface protocol be extended to include additional information beyond the bare minimum required to support registration. Such information might include directory information, business category, keywords and so forth. Many applicants in fact proposed to develop an extensible protocol (sometimes based on extensible markup language or XML) to support essentially unlimited extension to the content definition.

The following table summarizes the service offerings of the applicants with respect to the registry interface protocol:

Applicant	Registry Interface Protocol
Afilias, LLC	"Thick", extensible registry protocol with augmented information storage
Diebold Incorporated	Not applicable (combined registrar/registry)
iDomains, Inc.	"Thick" registry protocol
Image Online Design, Inc.	"Thin" proprietary protocol migrating to current RRP
JVTeam, LLC	"Thick", extensible protocol with augmented information storage
KDD Internet Solutions Co., Ltd.	"Thin" protocol using current RRP
NeuStar, Inc.	"Thick", extensible protocol with augmented information storage

In order for any new TLD to be attractive to consumers as an alternative to .com, to provide effective proof of concept, and to provide a realistic prospect of meeting unmet needs, proposed pricing and service levels must be competitive with other TLDs and operators having significant market share. The following table summarizes the applicants' proposed pricing and service levels:

Applicant	Price	SRS Availability	Time to Confirm	Time to Reliance	Capacity
Afilias, LLC	\$5.75 per year(2 year commitment)	99.90%	400 msec	5 minutes	230 tps

	(less volume rebates)				
Diebold Incorporated	\$10.00 per year	99.863%	4 seconds	6 hours	133 tps
iDomains, Inc.	\$5.45 per year	99.00%	1 second	6 hours	Unspecified
Image Online Design, Inc.	\$35 (\$20 to Registrar + \$15 to Registry)	99.99%	Unspecified	5 minutes	28.6 tps
JVTeam, LLC	\$3.75 - \$5.30 per year (volume discounts)	99.95%	500 msec	5 minutes	350 tps
KDD Internet Solutions Co., Ltd.	\$9.00 in 1st quarter; \$8.00 in 2nd quarter; \$7.00 in 3rd quarter; \$6.00 thereafter	99.40%	5 seconds	12-24 hours	2000 tps
NeuStar, Inc.	\$3.75 - \$5.30 per year (volume discounts)	99.95%	500 msec	5 minutes	350 tps

All of the applicants, except Image Online Design, propose a price of \$10.00 per year or less (some significantly less) for registrations. The current price of Verisign Global Registry, the registry operator of .com, is \$6.00 per year. The proposed pricing by Afilias, iDomains, JVTeam and NeuStar is under \$6.00 per year (and can go down to \$3.75) and the proposed pricing by KDD (by the end of the first year) matches the current Verisign price. Image Online Design's long-term price on the registry level is more than 2.5 times the initial pricing proposed by most of the applicants in this group.

The table above summarizes four measures of service provided by the registry, although other measures can be evaluated. Availability applies to the shared registry service (SRS). All applicants recognized that DNS service must be provided by a constellation of servers. "Time to Confirm" is the time required from posting for the registry to confirm that the name has been registered. "Time to Reliance" refers to the time required for the mapping to be updated in the zone files of the DNS. Many applicants consider that near-instant update is an important function, and the technical team concurs. Capacity is in terms of SRS transactions per second. All applicants listed in the table predict a high level of SRS availability, though the proposals submitted do not permit a reliable assessment of what levels of availability are actually achievable. With the exception of iDomains, all proposals project an acceptable level of availability.

A related issue for evaluation of a large, general TLD (which goes not only to effective competition with .com but also goes to an effective proof of concept) is the manner in which the applicants propose to handle the probable initial surge of registrants, especially with the potential for pre-registration. Intertwined with any initial surge is the issue of fairness to registrants and registrars. While this is not strictly a technical question, the solution may incorporate a technical approach because the initial surge may overwhelm one or more registry systems (SRS, Whois, Billing and Collection). The table below summarizes the approaches offered:

Applicant	Surge	Fairness
Afilias, LLC	Batch Processing	Random Selection
Diebold Incorporated	Declining Price	First Come First Served
iDomains, Inc.	Batch Processing	Random Selection
Image Online Design, Inc.	Direct Processing	First Come First Served
JVTeam, LLC	Batch Processing	Random Selection
KDD Internet Solutions Co., Ltd.	Direct Processing	First Come First Served
NeuStar, Inc.	Batch Processing	Random Selection

Direct processing is an approach whereby the registry provides sufficient capacity to capably process the maximum surge. Applicants that used this approach also processed the requests on a "first come, first served" basis. In contrast, the batch approach requires the registrars to provide requests periodically (for example, once per day) as a batch transfer. Requests are then processed as a batch using a random selection approach. The Diebold declining price approach establishes a higher initial price for names as a means of dampening demand.

Another competitive issue considered in evaluating the proposals is whether the proposals restrict the ability of accredited registrars to offer registration services within the TLD. The following table summarizes restrictions contained in these applications:

Applicant	Restrictions on Accredited Registrars
Afilias, LLC	No restrictions
Diebold Incorporated	Diebold will operate as sole registrar
iDomains, Inc.	No restrictions
Image Online Design, Inc.	Image Online Design will be the only registrar for the first year. In its pro forma financial statements, Image Online Design assumes that it will process 100% of all registrations in the first year; 80% for the next 6 months;

	70% for the next 6 months; 60% for the next 6 months; 50% for the next 6 months; 40% for the next 9 months; and 30% thereafter. ⁹
JVTeam, LLC	No restrictions
KDD Internet Solutions Co., Ltd.	No restrictions
NeuStar, Inc.	No restrictions

Both Diebold and, during its initial year, Image Online Design do not allow other registrars to process applications for the TLD. During the period of restriction, neither applicant provides other, effective mechanisms for providing competitive choices to domain-name holders seeking to register within the TLD. In addition, failure to use other accredited registrars may adversely impact effective marketing of the TLD to the public by eliminating marketing efforts by other accredited registrars and reduce the ability of the new TLD to provide an effective competitive alternative to .com.

Enhancement of Diversity

Enhancement of diversity is the other of the August 15 Criteria that seems particularly relevant to analysis of these proposals. Evaluation of whether these proposed TLDs enhance diversity encompasses several inquiries, including diversity in business models and of geographic locations. In addition, some of the factors identified in the August 15 Criteria in connection with effective proof of concept largely overlap the diversity evaluation. Some of the significant factors in evaluating whether the proposed TLDs enhances diversity are summarized in the following table:

Applicant	Location	Ownership	Outsource Partner	Revenue Model
Afilias, LLC	New York, NY	The 19 members of Afilias are existing registrars, based in 8 countries	Tucows, Inc. (Canada)	Subscription-based revenue model with a rebate based on volume
Diebold Incorporated	Canton, OH	Publicly held US corporation	None	Subscription-based revenue model
iDomains, Inc.	Bethlehem, PA	Privately-held US corporation	CORE (back-end subcontractor) (international consortium)	Subscription-based revenue model
Image Online Design, Inc.	San Luis Obispo, CA	Privately-held US corporation	GST Telecom (subcontractor of physical)	Subscription-based revenue model

			facilities for registry data center) (US) & UltraDNS (subcontractor for DNS Zone propagation) (US)	
JVTeam, LLC	Washington, D.C.	NeuStar, Inc. (US) & Melbourne IT (Australia)	None	Subscription-based revenue model with volume discounts
KDD Internet Solutions Co., Ltd.	Tokyo, Japan	Publicly held Japanese corporation	Verisign (primary in Phase 1 and secondary in Phase 2)	Subscription-based revenue model
NeuStar, Inc.	Washington, D.C.	Privately-held US corporation	None	Subscription-based revenue model with volume discounts

All of the applicants in this group, except KDD Internet Solutions, are based in the United States. KDD Internet Solutions is based in Tokyo, which would enhance diversity of geographic location of operators of large TLDs. However, KDD's choice of Verisign as its outsource partner somewhat counterbalances this diversity because of the current delegation of the .com registry to Verisign. KDD's application describes Verisign's role as "primary" in Phase 1 and "secondary" in Phase 2, but KDD's pro forma financial statements at the 50% confidence level show the revenue to Verisign increasing from ¥152 million in year 1 to ¥14.1 billion in year 6. The ¥14.1 billion in year 6 represents 89% of KDD's total costs. This suggests that, rather than becoming secondary, Verisign's role will remain significant.

Diversity of geography in ownership is also a relevant inquiry. Afilias' members are headquartered in Canada, Germany, India, Japan, Sweden, Switzerland, the United Kingdom and the United States. Sixty-five percent of Afilias' members have offices in North America, 53% in Europe, 26% in Asia and the Pacific Rim, 5% in Australia and 5% in the Middle East. One of two members in JVTeam is Melbourne IT, an Australian company.

Diversity of geography is also present in some of the outsource partners: Afilias' outsource partner is Tucows, a Canadian company, and iDomains' outsource partner is CORE, an international consortium based in Geneva, Switzerland of 72 member registrars in 20 countries and four continents.

All of the applicants have a subscription-based revenue model, although both JVTeam and NeuStar offer volume discounts that could bring their price down to \$3.75. Afilias anticipates offering a rebate to its registrars based on volume in

year 3, which if included in Afiliast's price would bring the price somewhat below \$5.00 per year by year five.

There is also a variety of organizational models among the applicants with various applicants being privately-held companies, publicly-held companies, and joint ventures. One unusual model is Afiliast. Afiliast currently consists of 19 ICANN accredited registrars committed to forming a large, open and diverse organization with no single company having a controlling interest. Afiliast's responses to questions state that the original membership criteria for joining the consortium were minimal, that all accredited registrars were offered the opportunity to join, and that as many as nine other ICANN accredited registrars expressed differing levels of interest in joining. Afiliast further states that one of its founding premises is to ensure to the fullest possible extent that a new general TLD not be owned, controlled by or benefit only a few large businesses, but instead be controlled by a geographically diverse group of ICANN accredited registrars. The structure of the operating documents tend to support Afiliast's claim of openness and diversity.

Pursuant to the Afiliast Operating Agreement, the original 19 members of Afiliast are and will remain the only Class A Unit members of the limited liability company. The Operating Agreement, however, allows qualified registrars to participate in an annual subscription program under which they are afforded the opportunity to purchase Class B Units of Afiliast. The criteria for qualified registrars, the number of units for each annual program and other mechanisms for the subscription program are determined by the Class A Unit members. The Operating Agreement envisions, over time, that the Class B Unit members will control a maximum of 60% of Afiliast and the Class A Unit members will control a minimum of 40% of Afiliast. This potential ownership arrangement also provides the basis for allocation of net income and loss: a maximum 60% allocation will go to Class B Unit members and a minimum of 40% will go to Class A Unit members. Afiliast defends this permanent allocation by pointing out that it will voluntarily give up majority control and allow non-founding members to reap the majority of the potential rewards, while guaranteeing the founding members' return based on their risk of investment.

Another interesting provision of the Operating Agreement provides that no member can own more than 11% of Afiliast. This limitation of ownership appears to promote a diverse membership base, while recognizing the potential for consolidation in the industry at the registrar level. Another feature of the Afiliast structure is the annual rebate program whereby 25% of the company's profits are distributed to all registrars registering the new TLD domain names. The rebate program is claimed to be a way for non-member registrars (as well as member registrars) to share in the economic profits of the company. The non-member registrars do not share the risk of any potential loss.

Although one of the members of Afiliast is Verisign, which on its face does not appear to enhance diversity or competition, depending upon how the operating agreement is implemented in practice, Afiliast's subscription program could offer an opportunity for many other applicants to participate at the ownership level in a TLD awarded to Afiliast. Limitations on ownership and potential control allocation to non-founding members tend to offset the negative effect Verisign's involvement may have on diversity or competition level analysis.

Enhancement of Utility of the DNS

Enhancement of the utility of the DNS is another of the August 15 Criteria relevant to these applications. These applications for general, open TLDs appear to sensibly add to existing DNS hierarchy, do not appear to create or add confusion to the existing DNS hierarchy, and are semantically far enough from existing TLDs to avoid confusion.

Protection of Rights of Others

Protection of the rights of others is another of the August 15 Criteria relevant to analysis of these proposals. In order to protect the rights of others, a general purpose TLD applicant should propose a well-thought-out plan for the allocation of domain names, especially during the initial rush for registrations, and provide adequate protections to stakeholders and third parties. Some of the significant factors of a well-thought-out plan include (1) whether the applicant provides for a "sunrise period"; (2) the adoption of dispute resolution procedures; (3) considerations for third party intellectual property protections; (4) Whois service mechanisms; and (5) policies to discourage abusive registration practices.

As mentioned in the June 13, 2000 report for the ICANN Yokohama Meeting Topic: Introduction of New Top Level Domains found at <http://icann.org/yokohama/new-tld-topic.htm> (the "June 13 Report"), a consensus exists that varying degrees of intellectual property protection is necessary during the start up phase of new TLDs. Furthermore, TLDs focusing primarily on commercial uses should afford greater protections than TLDs focusing on non-commercial uses. The general purpose category focuses on commercial use and presents the greatest risk of intellectual property violations. In general, these proposals provide basic methods for protecting and enforcing infringed rights (i.e. status quo) and offer limited extra protections. If one or more of the applicants in this group is accepted, the evaluation team recommends that further clarification and direction as to these protections be required.

The proposals in this group provide differing approaches for the protection of the rights of others, summarized as follows:

Sunrise Period

Affilias, iDomains and Diebold propose a sunrise period for registrations. The sunrise period programs for Affilias and iDomains are very similar and generally provide for a 90-day announcement period followed by a 30- to 60-day registration period, and concluding with a 30-day evaluation period. Sunrise registration will be available for trademark and service mark registrations which are effective and issued prior to October 2, 2000. Diebold, on the other hand, envisions a straight 90-day sunrise period during which trademark and service mark holders can register if they provide written documentation with proof of the holder's right covering the previous 12-month period.

For various reasons, the remaining applicants do not propose a sunrise period. JVTeam, KDD and Neustar, however, expressly state they will adopt a sunrise period if required by ICANN. Image Online Design proposes no sunrise period. Image Online Design and KDD will register domains on a strict first-come, first-served basis during the start-up phase.

Dispute Resolution Policy

All of the applicants propose to adopt the UDRP for dispute resolution. JVTeam and Neustar propose to modify the UDRP by allocating a daybreak implementation, which is not well defined in the application. (Afilias further intends to require binding, non-appealable arbitration for all disputes between it and its registrars.)

Third Party Intellectual Property Protections

None of the applicants propose extensive new protections. JVTeam and Neustar propose a fee-based intellectual property notification service: parties that register their marks with the registry will be notified if a registrant applies for the mark as a domain name. This is only a notification service, and neither JVTeam or Neustar will refuse the registration of the mark. iDomains will not pre-screen applicants but, during the sunrise period only, will require registrants to demonstrate ownership of a validly registered trademark.

Whois Services

JVTeam, Neustar and Diebold will make the Whois service publicly available and iDomains will provide an interactive web page and a port 43 Whois "fat" service allowing free public query-based access. Afilias will allow free public access to its registry level Whois database while KDD and Image Online intend to maintain the current level of Whois services.

Measures Against Abusive Registrations

Diebold commits to suspending registrations based on false contact data, but does not provide for third party challenge mechanisms. Image Online proposes a 14-day blackout period prior to entering the root to allow trademark holders to scan registered names and challenge registrations. The domain name would then be put on hold until resolution of the dispute. All of the applicants will rely on UDRP and additional mechanisms to police abusive registrations. In addition, iDomains' application states that it requires a two year pre-payment for registration to facilitate compliance with trademark and cybersquatting legislation. The JVTeam and Neustar proposals require only a self certification and forces the review burden on the registrars. JVTeam and iDomains provide limited registration restrictions requiring registrants for the .biz (or similar) TLDs to certify in one form or another that they are devoted to business/e-commerce activities.

Recommendations

In view of the submissions of multiple applications in this group that present strong proposals under the August 15 Criteria, the team believes that the Board could responsibly select a limited number of applications from this group. Selections should be made based on assessment of each proposal under a combination of the August 15 Criteria, as discussed above.

Footnotes:

2. We emphasize again that the evaluation at this stage was based solely on the applications themselves, and the material and information contained therein. Thus, the use of the word "demonstrate," which is intended to reflect the fact that these judgments were made on the basis of the applications, and not on extra-application facts or information.

3. In answer to a question from ICANN after submission of Image Online Design's application, Image Online Design states that "the period when external registrars are unable to process .Web registrations be as short as possible" [sic]. It also states that it has accelerated development of its RRP implementation in order to shorten the period of time during which "external" registrars are unable to process registrations and expects to begin a test bed within 30 to 60 days after entry into the root server. However, none of these statements are consistent with its application, and no necessary adjustments to its application were submitted. Image Online Design did not identify a different time period than the first year during which it would be the only registrar. Moreover, an attempt to so significantly revise a registry so soon after launch would be a serious stability problem.

4. Since Diebold and the ICANN staff were unable to reach agreement on its request for confidential treatment, Diebold elected to withdraw significant portions of its application, including its pro forma financial statements.

5. The applicants in this group were asked about their assumptions on expected demand. Of those applicants requesting more than one string, iDomains' estimate is based on being granted .biz; KDD's estimate is based on receiving both .biz and .home; and Afiliias' estimate is based on .web. In addition, the applicants were asked about their assumptions regarding other potential new TLDs. JVTeam responded that it assumed the introduction of additional general-purpose TLDs and multiple business TLDs over time. NeuStar responded that it assumed the introduction in subsequent rounds of other new open TLDs every 12 months after the introduction of .web.

6. Earnings before Interest and Taxes.

7. Earnings before Interest and Taxes.

8. Earnings before Interest and Taxes.

9. In answer to a question from ICANN after submission of Image Online Design's application, Image Online Design states that "the period when external registrars are unable to process .Web registrations be as short as possible" [sic]. It also states that it has accelerated development of its RRP implementation in order to shorten the period of time during which "external" registrars are unable to process registrations and expects to begin a test bed within 30 to 60 days after entry into the root server. However, none of these statements are consistent with its application, and no necessary adjustments to its application were submitted. Image Online Design did not identify a different time period than the first year during which it would be the only registrar. Moreover, an attempt to so significantly revise a registry so soon after launch would be a serious stability problem.

Comments concerning the layout, construction and functionality of this site
should be sent to webmaster@icann.org.

Page Updated 09-November-2000

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EXHIBIT JZ-41



ICANN Announces Selections for New Top-Level Domains



Marina del Rey, CA (November 16, 2000) — The board of directors of the Internet Corporation for Assigned Names and Numbers, (ICANN) today announced its selections for registry operators for new top level domains. The applications selected for further negotiation are the following:

- **.aero** — Societe Internationale de Telecommunications Aeronautiques SC, (SITA)
- **.biz** — JVTeam, LLC
- **.coop** — National Cooperative Business Association, (NCBA)
- **.info** — Afilias, LLC
- **.museum** — Museum Domain Management Association, (MDMA)
- **.name** — Global Name Registry, LTD
- **.pro** — RegistryPro, LTD

The ICANN staff will now work through the end of the year to negotiate registry agreements with the applicants selected. The proposed schedule for completion of negotiations is December 31, 2000. The negotiated registry agreements must then be approved by the board of directors. Following that approval, the ICANN board will forward its recommendations to the U.S. Department of Commerce for implementation.

For more on the history of ICANN's new TLD application process, please see <http://www.icann.org/tlds/>. Multimedia archives of the annual meeting can be reviewed at <http://cyber.law.harvard.edu/icann/la2000/>.

ABOUT ICANN

The Internet Corporation for Assigned Names and Numbers (ICANN) is a

technical coordination body for the Internet. Created in October 1998 by a broad coalition of the Internet's business, technical, academic, and user communities, ICANN is assuming responsibility for a set of technical functions previously performed under U.S. government contract by IANA and other groups.

Specifically, ICANN coordinates the assignment of the following identifiers that must be globally unique for the Internet to function:

- Internet domain names
- Internet Protocol address numbers
- protocol parameter and port numbers

In addition, ICANN coordinates the stable operation of the Internet's root server system.

As a non-profit, private-sector corporation, ICANN is dedicated to preserving the operational stability of the Internet; to promoting competition; to achieving broad representation of global Internet communities; and to developing policy through private-sector, bottom-up, consensus-based means. ICANN welcomes the participation of any interested Internet user, business, or organization. See <http://www.icann.org>.

Details

ICANN Announcements

16 Nov 2000

More Announcements

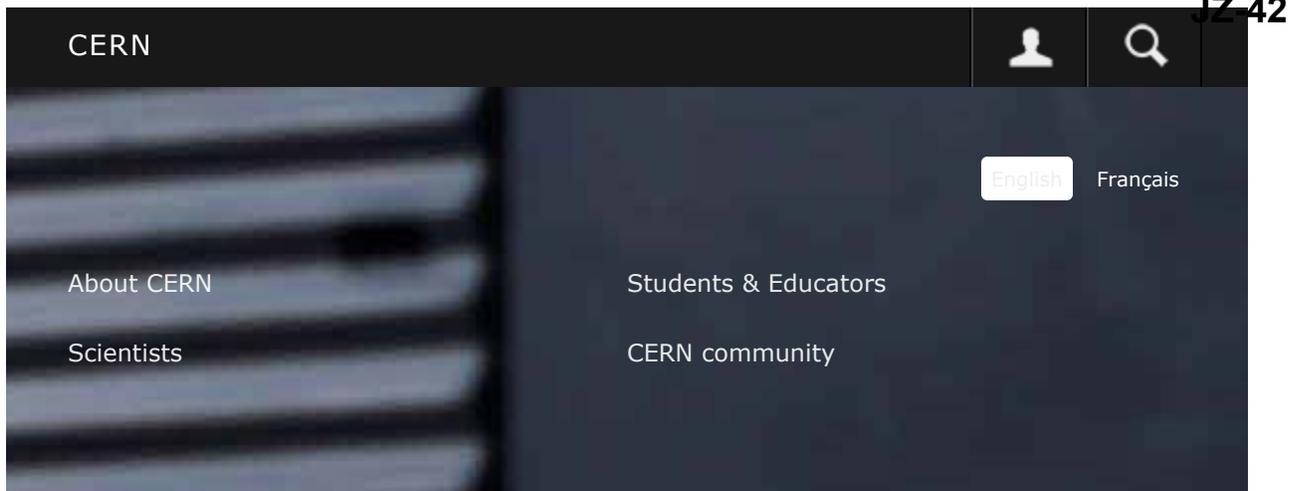
[Webinar: Proposed Updates to Draft Operating Standards](#)

[German Appellate Court Rules on ICANN Request to Preserve WHOIS Data](#)

[ICANN 2018 Nominating Committee Announces Updated Selections](#)

[Data Protection/Privacy Update Webinar Scheduled for 26 September 2018](#)

EXHIBIT JZ-42



The birth of the web

Tim Berners-Lee, a British scientist at CERN, invented the World Wide Web (WWW) in 1989. The web was originally conceived and developed to meet the demand for automatic information-sharing between scientists in universities and institutes around the world.

The first website at CERN - and in the world - was dedicated to the World Wide Web project itself and was hosted on Berners-Lee's NeXT computer. The website described the basic features of the web; how to access other people's documents and how to set up your own server. The NeXT machine - the original web server - is still at CERN. As part of the [project to restore the first website](#), in 2013 CERN reinstated the world's first website to its original address.

On 30 April 1993 CERN put the World Wide Web software in the public domain. CERN made the next release available with an open licence, as a more sure way to maximise its dissemination. Through these actions, making the software required to run a web server freely available, along with a [basic browser](#) and a library of code, the web was allowed to flourish.

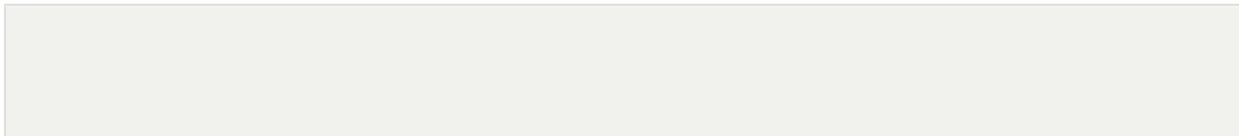
On the open internet and the free web

David Foster, 12 Mar 2014

Not at all vague and much more than exciting

Maria Dimou, 12 Mar 2014

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EXHIBIT JZ-43

Username: [y2k](#)**Date/Time:** Mon, October 30, 2000 at 9:48 PM GMT**Browser:** Microsoft Internet Explorer V5.0 using Windows 95**Score:** 5**Subject:**Why IOD? Over 20,025 Reasons Why**Message:**

Why .WEB ?

1. All inclusive (unlike .Mall, .Biz, .news, et)
2. Non controversial (Unlike .Sex, .XXX, .Aids, et)
3. Most recognized and well known prefix (unlike .nom, .wap, .ypi, .svc, et)
4. Poses as a serious contender to the already depleted .com, .net, .org suffixes
5. .WEB registry has been in continuous operation since July 31, 1996
6. .WEB already holds a strong following and tremendous support all over the world, from Internet and non-Internet users
7. Image Online Design's .WEB application meets all of ICANN's criteria
8. Over 20,000 registrants have approved of .WEB as their TLD selection

Why Image Online Design?

1. Currently the longest standing prospective registry
2. Active in its domain debate since its inception 4 years ago
3. Continuous work to ensure that policies and procedures are created fairly
4. Offers ongoing, effective, DNS Services
5. Has made significant upgrades to its technical infrastructure
6. Already uses a progressive and efficient Domain name system & Root server system
7. Has a proven track record of managing a technically adaptable highly stable domain name registry
8. Has adopted ICANN's Uniform Domain Name Dispute

Resolution Policy

9. Adheres to the Rules of using this policy
10. Maintains and sustains a completely secure website for private transactions and individual collections
11. Incredible support of .WEB customers, and users of the Internet all over the world
12. Supports and adheres to ICANN's overriding goal of opening up the domain name system and encouraging competition for domain name usage (opposed to Network Solutions, Inc. who controls 98% of all domain name registrations in the US, two-thirds of all domain registrations in the world, and seeks to monopolize the domain name market).
13. Does not undermine ICANN's goal to select a diversity of proposals to become TLD's (unlike NSI's Afilias that poses a transparent attempt to circumvent this process).
14. Has become one of the most sophisticated pioneer registries in the country
15. Image Online Design brings stability to the internet, meets the diversity of proposal test, and is committed to protecting intellectual property rights.
16. Does not propose a conflict of interest, nor is it monopolistic, like Ken Stubbs, NSI, or Afilias.
17. WAS ALREADY GIVEN PERMISSION TO BECOME THE .WEB REGISTRY BY IANA YEARS AGO!

Over 20,000 Supporters of Image Online Design
And .WEB exist all over the Country, all over
the World.

Please join us in supporting

Image Online Design's .WEB proposal

and Thank You !

Dr. Z.C.Wilson
New York, USA

Obvious Solution the TLD choices:

Grant Image Online Design (IOD) the rights

to the .WEB Registry, and if there is a need to give Afilias a registry, grant them the rights to .info and .site.

It's a WIN-WIN SITUATION !

Message Thread:

- [.web Application by Image Online Design dba Web Registry](#) — Moderator, October 7 @ 9:53 PM (126/442)
 - [My final views on Image Online.](#) — cgrady, November 6 @ 12:40 AM (0/0)
 - [IOD is a globally recogized stable registry](#) — Gregory W. Krajewski, November 5 @ 10:21 PM (1/2)
 - [Final Letter of Support for .web and Image Online Design](#) — S. Hudgens, November 5 @ 11:21 PM (1/1)
 - [Thanks to everyone who posted!!!](#) — Gregory W. Krajewski, November 6 @ 1:12 AM (0/0)
 - [In RegLand.com already 280 of the TOP 520 .web names are "preregistered".](#) — friedrich, November 5 @ 9:56 PM (0/0)
 - [Say YES! to IOD](#) — first1, November 5 @ 3:42 PM (0/0)
 - [Very serious legal concerns regarding trademark law!](#) — friedrich, November 5 @ 2:11 PM (0/0)
 - [DNSO warning against "pre-registrations" can't affect IOD, due to its unique and special history](#) — fabrcop, November 5 @ 10:28 AM (0/0)
 - [ICANN: we know you are listening and we are confident in your fairness](#) — fabrcop, November 5 @ 10:22 AM (0/0)
 - [IOD issues](#) — useyourhead, November 5 @ 6:54 AM (1/2)
 - [Answer - your presumption is incorrect](#) — cambler, November 5 @ 5:26 PM (1/1)
 - [AGAIN, IOD's integrity at work. This is why they are so heavily supported. BECAUSE WE TRUST THEM.](#) — cgrady, November 6 @ 12:57 AM (0/0)
 - [Pioneer Preference is best way](#) — netizen1, November 5 @ 5:54 AM (0/0)
 - [The TOP 520 .web names belong to 180 people](#) — friedrich, November 5 @ 3:17 AM (2/2)
 - [I agree!](#) — fabrcop, November 5 @ 10:17 AM (0/0)
 - [and Netsol with blocked names?](#) — theboss, November 5 @ 8:52 AM (0/0)
 - [Another Positive Aspect Of The IOD Application](#) — dcorish, November 5 @ 12:51 AM (0/0)
 - ["Dirt in The Domain Name Game"](#) — jtrade, November 5 @ 12:09 AM (0/0)
 - [NO ! to IOD - NO to .web](#) — SayNoToIOD, November 4 @ 7:45 PM (6/7)
 - [You are boring with your false \(and anonymous\) statements](#) — fabrcop, November 5 @ 10:11 AM (0/0)
 - [Say YES! to IOD :\)](#) — first1, November 4 @ 11:15 PM (0/0)
 - [Sir, you do have a right to post here, however not to distort the truth](#)

- [Gregory W. Krajewski](#), November 4 @ 11:11 PM (0/0)
- [Still waiting for your answer to my comments.](#) — [friedrich](#), November 4 @ 10:54 PM (0/0)
- [You make no Sense](#) — [Merlin](#), November 4 @ 8:10 PM (0/0)
- [These allegations are, of course, false](#) — [cambler](#), November 4 @ 8:08 PM (1/1)
 - [IOD does deserve an apology from SayNoToIOD](#) — [S. Hudgens](#), November 5 @ 11:33 PM (0/0)
- [Letters in Support of IOD](#) — [jtrade](#), November 4 @ 7:21 PM (1/1)
 - [They were scanned: 1200x1600 and have 500KB each](#) — [friedrich](#), November 5 @ 12:01 AM (0/0)
- [Yes IOD no to Afilias/Neustar on .web](#) — [pvos](#), November 4 @ 6:38 PM (0/0)
- [ICANN: Please correct *NEW* errors before nov 5](#) — [Saskia](#), November 4 @ 1:10 PM (1/1)
 - [Now the links are fixed...](#) — [fabrcop](#), November 4 @ 6:56 PM (0/0)
- [IOD should run .WEB](#) — [H](#), November 3 @ 11:09 PM (1/1)
 - [I agree...](#) — [fabrcop](#), November 4 @ 1:11 PM (0/0)
- [Trademarks can be protected WITHOUT a Sunrise Period! \(New TLDs are needed SOON\)](#) — [fabrcop](#), November 3 @ 7:37 PM (0/0)
- [ICANN: Please correct errors before nov 5](#) — [saskia](#), November 3 @ 1:02 PM (0/0)
- [IOD has earned .WEB through hard work](#) — [ar](#), November 3 @ 6:41 AM (0/0)
- [Summing it all up..](#) — [netfxmedia](#), November 2 @ 11:02 PM (0/0)
- [Say Yes To IOD for the web TLD](#) — [JaseK](#), November 2 @ 9:03 PM (0/0)
- [ICANNs silence with IOD must be a nod of approval](#) — [jeffrey](#), November 2 @ 2:30 PM (0/0)
- [CONTRADICTIONS in IPC's comment about IOD/.web application!](#) — [fabrcop](#), November 2 @ 1:09 PM (0/0)
- [What is the point of .web?](#) — [james fryer](#), November 2 @ 12:41 AM (2/7)
 - [Did you compare?](#) — [friedrich](#), November 3 @ 3:11 AM (1/4)
 - [.WEB still seems pointless](#) — [james fryer](#), November 3 @ 9:50 AM (1/3)
 - [Why pointless?](#) — [friedrich](#), November 3 @ 11:23 PM (1/2)
 - [Because it doesn't tell you anything you don't already know](#) — [james fryer](#), November 4 @ 10:48 AM (1/1)
 - [No arguments against .web](#) — [friedrich](#), November 4 @ 9:45 PM (0/0)
 - [<sigh>](#) — [For The People](#), November 2 @ 8:08 PM (1/1)
 - [.WEB](#) — [james fryer](#), November 3 @ 9:52 AM (0/0)
- [IOD and the Texas republic](#) — [SayNoToIOD](#), November 2 @ 6:58 AM (4/5)
 - [Are you a "self-proclaimed authority"?](#) — [friedrich](#), November 3 @ 11:33 PM (0/0)
 - [This comparison is completely wrong](#) — [fabrcop](#), November 2 @ 9:56 AM (0/0)
 - [Metaphors](#) — [For The People](#), November 2 @ 7:34 AM (0/0)
 - [Texans...](#) — [rlangsford](#), November 2 @ 7:16 AM (1/1)
 - [Texas note](#) — [PHXbird](#), November 2 @ 8:03 PM (0/0)
- [Give Image Online Design .WEB // Give Afilias .INFO](#) — [worldwide](#), November 2 @ 5:48 AM (0/0)
- [Alert: Conflicts of Interest Addressed](#) — [VikashPatel](#), November 2 @ 4:59 AM

(1/1)

- [Conflict of interest](#) — [rlangsford](#), November 2 @ 6:52 AM (0/0)
- [IOD application for .web makes sense to me](#) — [veronica](#), November 2 @ 12:34 AM (0/0)
- [Moral rights](#) — [fabrcop](#), November 1 @ 2:02 PM (0/0)
-Why IOD? Over 20,025 Reasons Why — [y2k](#), October 30 @ 9:48 PM (0/0)
- [ICANN: listen to this suggestion and be appreciated all over the world](#) — [fabrcop](#), October 30 @ 9:13 PM (2/5)
 - [Grant .WEB to IODesign // Grant .INFO to Afilias](#) — [worldwide](#), November 2 @ 5:54 AM (1/1)
 - [No, monopolies should not be given any domain names](#) — [ar](#), November 3 @ 6:54 AM (0/0)
 - [I agree...](#) — [tcleland](#), October 31 @ 7:39 PM (1/2)
 - [Well said \(the perfect choice is: IOD/.web ; Afilias/.info ; Neustar/.site \)](#) — [fabrcop](#), November 1 @ 8:53 AM (1/1)
 - [Do Afilias and Neustar deserve some sort of door prize?](#) — [jeffrey](#), November 2 @ 3:13 PM (0/0)
- [Ethics in Government: ICANN's Role in .web](#) — [mbrittan](#), October 29 @ 10:57 PM (3/5)
 - [IOD's "prior occupation"](#) — [tcleland](#), October 31 @ 7:52 PM (0/0)
 - [Are we men of little faith when it comes to ICANN?](#) — [rlangsford](#), October 30 @ 5:37 AM (0/0)
 - [first in what](#) — [SayNoToIOD](#), October 30 @ 4:18 AM (2/2)
 - [Waiting for your comments.](#) — [friedrich](#), October 30 @ 7:55 PM (0/0)
 - [Back your comments up! Spewing Rhetoric shows your knowledge about the DNS](#) — [Gregory W. Krajewski](#), October 30 @ 4:43 AM (0/0)
- [IOD "Pioneer's Preference" Confusion](#) — [S. Hudgens](#), October 28 @ 2:05 PM (0/0)
- [Desperation](#) — [hitz](#), October 27 @ 6:50 PM (7/12)
 - [Don't you understand that Internet People means IOD registrants?!](#) — [fabrcop](#), October 30 @ 9:31 AM (0/0)
 - [I agree](#) — [SayNoToIOD](#), October 30 @ 2:57 AM (2/2)
 - [Jim Smith](#) — [friedrich](#), October 31 @ 9:54 AM (0/0)
 - [You're kidding, right?](#) — [For The People](#), October 30 @ 7:12 AM (0/0)
 - [Hitz=Wiredz=Moron](#) — [dtan](#), October 28 @ 9:30 AM (0/0)
 - [Is this the best you can do?](#) — [cambler](#), October 27 @ 9:02 PM (2/3)
 - [Some messages don't deserve a response.](#) — [S. Hudgens](#), October 28 @ 1:39 PM (0/0)
 - [Nice To Have You Back!](#) — [Mario](#), October 27 @ 9:03 PM (1/1)
 - [Not quite back :-\)](#) — [cambler](#), October 27 @ 9:06 PM (0/0)
 - [Prove it.](#) — [For The People](#), October 27 @ 8:05 PM (0/0)
 - [Hear Is What We Fear, "hitz"](#) — [pilot2](#), October 27 @ 7:19 PM (0/0)
 - [hitz your an idiot](#) — [Merlin](#), October 27 @ 7:10 PM (0/0)
- [IOD's Application For .WEB Qualifies, At Very Least, For "Pioneer's Preference" Exemption](#) — [pilot2](#), October 27 @ 4:54 PM (1/1)
 - [I agree... ICANN cannot create a scandal](#) — [fabrcop](#), October 30 @ 8:16 AM (0/0)
- [ICANN: please post other documents about IOD/.web also \(in the](#)

- [correspondence](#)) — [fabrcop](#), October 26 @ 6:30 PM (1/1)
 - [Hello?](#) — [hitz](#), October 27 @ 6:21 PM (0/0)
- [What Happens to the Pre-registrations if IOD doesn't get .Web?](#) — [Irfarny](#), October 26 @ 2:33 AM (1/2)
 - [or "...if IOD does get .Web?"](#) — [Mario](#), October 26 @ 5:17 AM (1/1)
 - [I think that IOD and IOD registrants must be considered together as a single entity...](#) — [fabrcop](#), October 26 @ 12:57 AM (0/0)
- [vote for IOD - see interview Dyson - our request trademark NSI](#) — [ted](#), October 26 @ 1:06 AM (0/0)
- [the jury will say no](#) — [SayNoToIOD](#), October 25 @ 11:35 PM (3/3)
 - [Now you even insult juries of being stupid ...](#) — [friedrich](#), October 31 @ 10:28 AM (0/0)
 - [I don't understand your arguments](#) — [fabrcop](#), October 26 @ 12:51 AM (0/0)
 - [Not for anything...](#) — [For The People](#), October 25 @ 11:44 PM (0/0)
- [The JV Team's wants to turn ".WEB" into ".bigbucks"](#) — [TLD Facts](#), October 25 @ 8:11 PM (0/0)
- [who had the original idea?](#) — [theboss](#), October 25 @ 7:37 PM (1/1)
 - [If you're new to this arguement read teh MSNBC article \(link in message\)](#) — [daved](#), November 2 @ 4:43 PM (0/0)
- [ICANN vs IOD](#) — [Doc Again](#), October 25 @ 7:18 PM (0/0)
- [To: C.Ambler, IOD . IMPORTANT QUESTIONS.](#) — [IODskeptic](#), October 25 @ 1:10 PM (1/7)
 - [Answer](#) — [cambler](#), October 25 @ 8:03 PM (2/6)
 - [HmMMM](#) — [hitz](#), October 27 @ 6:14 PM (1/1)
 - ["hitz", Should We Consider You A Representative From An Applicant?](#) — [pilot2](#), October 27 @ 6:44 PM (0/0)
 - [Please let me know the real meaning of the lawsuit...](#) — [IODskeptic](#), October 26 @ 6:45 PM (1/3)
 - [Lawyers](#) — [cambler](#), October 26 @ 7:18 PM (1/2)
 - [Conflicting statements](#) — [hitz](#), October 27 @ 6:18 PM (1/1)
 - [Not conflicting at all](#) — [cambler](#), October 27 @ 8:59 PM (0/0)
- [I encourage everyone to read IOD's application - I would like to know what others are thinking!! I](#) — [Gregory W. Krajewski](#), October 25 @ 5:56 AM (1/1)
 - [Dealing with the past](#) — [TLD Facts](#), October 25 @ 7:10 PM (0/0)
- [MSNBC Article about ICANN and .Web](#) — [jtrade](#), October 25 @ 3:56 AM (3/8)
 - [msnbc-meeks-icann](#) — [webster](#), October 26 @ 5:42 PM (3/5)
 - [You form part of those 16 people who have posted many comments.](#) — [friedrich](#), October 27 @ 3:20 PM (0/0)
 - [Who Made You God?](#) — [enforcer](#), October 26 @ 10:12 PM (0/0)
 - [Crocker is conflicted](#) — [cambler](#), October 26 @ 7:12 PM (1/2)
 - [Biased opinions?](#) — [hitz](#), October 27 @ 6:24 PM (1/1)
 - [Is that really the best that you can do?](#) — [Doc Again](#), October 28 @ 3:48 AM (0/0)
 - [MSNBC Article:💎 Compelling!💎 A Must Read!](#) — [pilot2](#), October 25 @ 10:52 PM (0/0)
 - [Very interesting and important articole!](#) — [fabrcop](#), October 25 @ 2:07 PM (0/0)
- [Chris](#) — [CrossFire](#), October 24 @ 8:48 PM (0/0)

- [IOD, what does that stands for?](#) — [anonymous](#), October 24 @ 5:56 AM (1/3)
 - [Not Another Monopoly](#) — [cambler](#), October 24 @ 8:01 AM (1/2)
 - [Nice shot at other .web applicants](#) — [hitz](#), October 27 @ 6:29 PM (1/1)
 - [To Correct You Sir, Don't Blame IOD For This "Question & Answer" Forum](#) — [pilot2](#), October 27 @ 7:05 PM (0/0)
- [IOD and Ken Stubbs](#) — [Merlin](#), October 24 @ 12:18 AM (4/4)
 - [On the Money!](#) — [first1](#), October 25 @ 4:00 AM (0/0)
 - [This Article is definitely worth a look!!!](#) — [VikashPatel](#), October 24 @ 1:55 AM (0/0)
 - [Your Dead Right](#) — [enforcer](#), October 24 @ 1:29 AM (0/0)
 - [I AGREE](#) — [VikashPatel](#), October 24 @ 1:01 AM (0/0)
- [Some arguments pro/contra IODs .web ... please read!](#) — [friedrich](#), October 23 @ 7:08 PM (1/1)
 - [I agree](#) — [fabrcop](#), October 23 @ 7:42 PM (0/0)
- [The truth about .web \(short version\)](#) — [fabrcop](#), October 23 @ 3:26 PM (1/1)
 - [Excellent Post!!!](#) — [VikashPatel](#), October 24 @ 1:10 AM (0/0)
- [The truth about .web \(long version\)](#) — [fabrcop](#), October 23 @ 3:21 PM (1/1)
 - [Vote yes to IOD - there is an indisputable argument for doing so posted here.](#) — [joannalane](#), November 1 @ 7:24 PM (0/0)
- [The success of new TLDs rests right here...](#) — [Rob](#), October 23 @ 3:23 AM (0/0)
- [IOD's willingness to field questions in this forum & Afilias' absence thereof](#) — [Hudgens](#), October 22 @ 8:55 PM (1/5)
 - [Your answer is...](#) — [World Thoughts](#), October 22 @ 9:07 PM (1/4)
 - [Perhaps...](#) — [Hudgens](#), October 22 @ 9:19 PM (1/3)
 - [Media](#) — [World Thoughts](#), October 22 @ 9:32 PM (1/2)
 - [I had an interview on Friday....with the National Journal Technical Daily...](#) — [Gregory W. Krajewski](#), October 22 @ 10:54 PM (1/1)
 - [Interview](#) — [Hudgens](#), October 22 @ 11:02 PM (0/0)
- [MODERATOR-PLEASE MANAGE THE BULLETIN BOARD MORE EFFECTIVELY. PUT MOST ACTIVE SECTIONS AT TOP!!!](#) — [Facilitator](#), October 22 @ 7:29 PM (2/14)
 - [Facilitator](#) — [Mario](#), October 22 @ 8:34 PM (0/0)
 - [Facilitator-----YOU are way out of line. Cut it out! You are spamming this everywhere.](#) — [World Thoughts](#), October 22 @ 7:40 PM (1/12)
 - [World Thoughts](#) — [Facilitator](#), October 22 @ 8:07 PM (1/11)
 - [Reply](#) — [World Thoughts](#), October 22 @ 8:43 PM (2/10)
 - [Remember](#) — [Facilitator](#), October 22 @ 9:12 PM (1/6)
 - [Sir...](#) — [World Thoughts](#), October 22 @ 9:39 PM (1/5)
 - [Thank you both](#) — [cambler](#), October 22 @ 9:42 PM (3/4)
 - [More useless noise here !!](#) — [global view](#), October 23 @ 3:46 AM (1/1)
 - [With all due respect...](#) — [World Thoughts](#), October 23 @ 4:02 AM (0/0)
 - [My Feelings As Well](#) — [Facilitator](#), October 23 @ 1:01 AM (0/0)
 - [Thank you as well.](#) — [World](#)

- [Read the applications and you will see that IODesign is the best choice for .web](#) — [fabrcop](#), October 16 @ 5:34 PM (0/0)
- [To C.Ambler, IOD: Question #5](#) — [IODskeptic](#), October 16 @ 10:26 AM (1/1)
 - [Answer](#) — [cambler](#), October 16 @ 9:04 PM (0/0)
- [To C.Ambler, IOD: Question #4](#) — [IODskeptic](#), October 16 @ 10:25 AM (3/3)
 - [re: IOD and limited liability \(nonrefundable reg fees\)](#) — [pvos](#), October 24 @ 5:06 PM (0/0)
 - [Why Image Online's .WEB Registry Exists](#) — [cgrady](#), October 17 @ 5:33 AM (0/0)
 - [Answer](#) — [cambler](#), October 16 @ 9:02 PM (0/0)
- [To C.Ambler, IOD: Question #3](#) — [IODskeptic](#), October 16 @ 10:24 AM (1/1)
 - [Answer](#) — [cambler](#), October 16 @ 8:59 PM (0/0)
- [To C.Ambler, IOD: Question #2](#) — [IODskeptic](#), October 16 @ 10:23 AM (1/1)
 - [Answer](#) — [cambler](#), October 16 @ 8:57 PM (0/0)
- [To C.Ambler, IOD: Question #1](#) — [IODskeptic](#), October 16 @ 10:22 AM (2/2)
 - [My \\$35 registration fee.](#) — [cgrady](#), October 17 @ 5:08 AM (0/0)
 - [Answer](#) — [cambler](#), October 16 @ 8:54 PM (0/0)
- [TO ICANN: This will be our official pro Dot Web and IOD string.....PLEASE POST UNDERNEATH...](#) — [Gregory W. Krajewski](#), October 15 @ 5:47 PM (18/21)
 - [Support of IOD](#) — [jweb](#), November 5 @ 3:06 PM (0/0)
 - [Give .WEB to IODesign // .INFO to Afilias](#) — [worldwide](#), November 2 @ 6:05 AM (0/0)
 - [In support of IOD and the .web appliation](#) — [Anthony](#), October 23 @ 10:20 PM (0/0)
 - [I Support Dot Web and IOD](#) — [jumper](#), October 18 @ 12:37 AM (0/0)
 - [Manufacturer Supports .WEB](#) — [pilot](#), October 17 @ 5:21 PM (0/0)
 - [Don't Forget To Ask This Person For Support...](#) — [AdvantaTel](#), October 17 @ 1:49 AM (1/1)
 - [Special help](#) — [PHXbird](#), October 17 @ 3:21 AM (0/0)
 - [A non .web registrant in support of IOD](#) — [md](#), October 16 @ 11:07 PM (0/0)
 - [I think that it is fair that IODesign runs the .web registry](#) — [fabrcop](#), October 16 @ 5:29 PM (0/0)
 - [Support IOD](#) — [first1](#), October 16 @ 1:36 PM (0/0)
 - [IODesign is most deserving of .web](#) — [.webSupporter](#), October 16 @ 1:05 PM (0/0)
 - [I support .web and IOD, because...](#) — [saskia](#), October 16 @ 11:25 AM (1/1)
 - [Full support for IOD from Poland!](#) — [arcadius](#), October 17 @ 12:13 AM (0/0)
 - [Break the NSI \(DoC\) monopoly!](#) — [Rob](#), October 16 @ 10:24 AM (0/0)
 - [IOD supporter](#) — [enforcer](#), October 16 @ 4:06 AM (0/0)
 - [I support IODs application for .web](#) — [friedrich](#), October 15 @ 9:09 PM (0/0)
 - [I support .web and IOD](#) — [treherne](#), October 15 @ 9:03 PM (1/1)
 - [I support IOD](#) — [sascha](#), October 16 @ 10:23 AM (0/0)
 - [I support .web and IOD, diversity and small business WORLDWIDE!](#) — [Rebeka](#), October 15 @ 6:29 PM (0/0)
 - [I Support Dot Web and IOD](#) — [Gregory W. Krajewski](#), October 15 @ 6:16 PM (0/0)
 - [.web network](#) — [liquidsilver](#), October 15 @ 6:00 PM (0/0)

- [Has the creation of AFILIAS been approved by respective authorities having supervision of cartels?](#) — [friedrich](#), October 15 @ 5:05 PM (0/0)
- [Full support of IO Designs .web application](#) — [friedrich](#), October 15 @ 4:15 PM (0/0)
- [IOD Application](#) — [Mr. Lawrence](#), October 15 @ 2:13 PM (0/0)
- [Interlecutal property is protected](#) — [doc](#), October 15 @ 12:35 AM (1/2)
 - [SUNRISE PERIOD!](#) — [first1](#), October 15 @ 5:38 PM (1/1)
 - [i agree](#) — [thecurve](#), November 4 @ 2:15 PM (0/0)
- [WHERE'S THE GLOBAL COMMITMENT HERE ?](#) — [TRUTH BE TOLD](#), October 15 @ 11:03 AM (3/5)
 - [Global Concerns](#) — [cambler](#), October 15 @ 6:30 PM (0/0)
 - [Global Commitment By Applicants](#) — [Mr. Lawrence](#), October 15 @ 3:43 PM (2/2)
 - [Corrections](#) — [PHXbird](#), October 15 @ 5:21 PM (0/0)
 - [More About Global Commitment ...](#) — [Mr. Lawrence](#), October 15 @ 4:18 PM (0/0)
 - [Touche!](#) — [anthony](#), October 15 @ 12:40 AM (0/0)
- [THE REAL FACTS ABOUT IO DESIGN](#) — [TRUTH BE TOLD](#), October 15 @ 10:22 AM (2/10)
 - [Small Corrections from IOD](#) — [cambler](#), October 15 @ 6:43 PM (1/7)
 - [A question](#) — [BrianC](#), October 15 @ 11:42 PM (1/6)
 - [Answer](#) — [cambler](#), October 16 @ 7:06 PM (2/5)
 - [Well done, Mr. Ambler! I really, really admire you](#) — [wiredz](#), October 20 @ 7:38 PM (2/2)
 - [Still waiting for an answer...](#) — [cambler](#), October 22 @ 5:10 AM (0/0)
 - [Sue?](#) — [cambler](#), October 20 @ 8:29 PM (0/0)
 - [RE: Answer](#) — [jwatts](#), October 16 @ 7:47 PM (1/1)
 - [The Past](#) — [cambler](#), October 16 @ 8:51 PM (0/0)
 - [LIE BE TOLD](#) — [fabrcop](#), October 15 @ 1:28 PM (1/1)
 - [:O?](#) — [liquidsilver](#), October 15 @ 6:02 PM (0/0)
- [I am confident in ICANN's fairness, so .web=IOD](#) — [fabrcop](#), October 15 @ 7:26 AM (0/0)
- [K.I.S.S.](#) — [debbie](#), October 15 @ 4:36 AM (1/1)
 - [Acronyms](#) — [PHXbird](#), October 15 @ 10:37 PM (0/0)
- [IODesign's .WEB Application](#) — [SEZenith](#), October 15 @ 3:52 AM (0/0)
- [IOD .WEB BID - SUPPORT](#) — [Frank S.](#), October 15 @ 1:35 AM (0/0)
- [A Recommendation to Posters. But More Than That--A Call to ICANN — For The People](#), October 15 @ 12:56 AM (0/0)
- [IOD Lawsuit against IANA](#) — [jtrade](#), October 14 @ 11:48 PM (1/1)
 - [Very useful links for those who do not believe that IOD was authorized by IANA](#) — [fabrcop](#), October 15 @ 9:14 AM (0/0)
- [Cancel PRE-REGISTRATIONS ATIOD](#) — [Webster](#), October 14 @ 11:01 PM (3/5)
 - [.CA is doing it.](#) — [JeffB](#), October 15 @ 9:21 AM (0/0)
 - [IF YOU CANCEL .WEB REGISTRATIONS, THEN SAME FOR .COM, .NET, AND .ORG](#) — [pilot](#), October 15 @ 12:24 AM (1/1)
 - [Cancel Webster's bank account: this is just as absurd as to cancel IOD's registrations](#) — [fabrcop](#), October 15 @ 7:35 AM (0/0)
 - [I don't think so](#) — [Merlin](#), October 14 @ 11:35 PM (1/1)

- [To Merlin](#) — [Webster](#), October 15 @ 1:52 AM (0/0)
- [TO THE ICANN BOARD MEMBERS: Dot Web/IOD Supporters are getting organized...Building a website!!](#) — [Gregory W. Krajewski](#), October 14 @ 6:56 PM (2/3)
 - [Big mistake](#) — [Shayne](#), October 14 @ 10:47 PM (0/0)
 - [RE: TO THE ICANN BOARD MEMBERS:](#) — [eedlee](#), October 14 @ 9:31 PM (1/1)
 - [yup](#) — [anthony](#), October 14 @ 9:36 PM (0/0)
- [IOD congratulations! A job well done!](#) — [first1](#), October 14 @ 6:47 PM (0/0)
- [I'm Interested.](#) — [Abaddon](#), October 14 @ 6:00 PM (1/1)
 - [Abaddon](#) — [Webster](#), October 14 @ 11:17 PM (0/0)
- [URGENT: Please watch this video of Ken Stubbs proving his abusive self-interest](#) — [Infinity](#), October 14 @ 5:50 PM (0/0)
- [Image Online Design's claim of Conflict of Interest for Ken Stubbs!](#) — [jcowell](#), October 14 @ 5:09 PM (2/4)
 - [CLEAR the DATABASE and IOD's Suit Threats](#) — [stokdoctor](#), October 21 @ 9:34 PM (2/2)
 - [Sir...](#) — [For The People](#), October 21 @ 11:36 PM (0/0)
 - [Sorry, That's Impossible](#) — [pilot](#), October 21 @ 11:10 PM (0/0)
 - [jcowell](#) — [PHXbird](#), October 15 @ 3:45 AM (0/0)
- [Online Design has worked hard from 1995...](#) — [support_dot_web](#), October 14 @ 3:34 PM (0/0)
- [rules for .web tld](#) — [jeffB](#), October 14 @ 2:49 PM (0/0)
- [Come on! Lets have a decent argument!](#) — [anthony](#), October 14 @ 2:13 PM (0/0)
- [Vote of confidence in IOD and .web](#) — [anthony](#), October 14 @ 12:53 AM (0/0)
- [WOAH!! WOAH!! WOAH!! Can someone please verify this!!](#) — [cgrady](#), October 14 @ 7:08 AM (2/2)
 - [THIS STINKS...I THINK THE MANIPULATION IS OBVIOUS](#) — [support_dot_web](#), October 14 @ 3:36 PM (0/0)
 - [Let's go to the source...](#) — [marshm](#), October 14 @ 12:44 AM (0/0)
- [My .web comments for ICANN](#) — [BrianC](#), October 14 @ 7:04 AM (3/13)
 - [YES to IOD](#) — [fabrcop](#), October 14 @ 1:49 PM (0/0)
 - [NO TO IOD](#) — [Webster](#), October 14 @ 11:13 AM (2/3)
 - [Has ICANN already chosen?](#) — [first1](#), October 14 @ 6:58 PM (0/0)
 - [I can't see what you mean! Actually IANA's authorization to IOD can be proved \(legally\)](#) — [fabrcop](#), October 14 @ 5:10 PM (1/1)
 - [Will You Testify.....Under Oath](#) — [Webster](#), October 14 @ 6:33 PM (0/0)
 - [BrianC is right](#) — [wiredz](#), October 14 @ 10:52 AM (4/7)
 - [IOD Application](#) — [marshm](#), October 14 @ 5:06 PM (1/1)
 - [Gene Marsh, read my comments!](#) — [wiredz](#), October 20 @ 4:28 PM (0/0)
 - [Please...LET's stick to the FACTS.....Saying things without giving facts=empty words](#) — [Gregory W. Krajewski](#), October 14 @ 4:05 PM (1/1)
 - [Gred, read my comments](#) — [wiredz](#), October 20 @ 6:21 PM (0/0)
 - [Wiredz here are the facts](#) — [jtrade](#), October 14 @ 3:37 PM (0/0)
 - [You say nothing.](#) — [Infinity](#), October 14 @ 3:07 PM (1/1)
 - [Infinity, see my comments over your remark](#) — [wiredz](#),

October 20 @ 6:29 PM (0/0)

- [Ken Stubbs & Conflicts of Interest Policy](#) — [RDM](#), October 14 @ 5:12 AM (1/2)
 - [Lack of Internal Controls at ICANN?](#) — [TheWebster](#), October 14 @ 6:04 AM (1/1)
 - [IOD reliant partner](#) — [Mel](#), October 14 @ 2:14 PM (0/0)
- [Give IOD the .Web Registration](#) — [Attorney](#), October 14 @ 1:45 AM (0/0)
- [IODESIGN'S .Web Registration](#) — [Unexplored, Inc.](#), October 14 @ 1:11 AM (0/0)
- [My Letter to ICANN](#) — [cgrady](#), October 14 @ 1:05 AM (1/2)
 - [My One Regret](#) — [cgrady](#), October 14 @ 1:47 AM (1/1)
 - [How right you are!](#) — [anthony](#), October 14 @ 4:38 PM (0/0)
- [TO ALL ICANN BOARD MEMBERS: Evidence why the DOT WEB domain and IOD get our VOTE!!](#) — [Gregory W. Krajewski](#), October 14 @ 12:55 AM (1/2)
 - [Another Reason to Vote for DOT WEB AND IOD: They WILL protect Trademarked names](#) — [Gregory W. Krajewski](#), October 14 @ 3:52 AM (1/1)
 - [Another Reason to Vote for DOT WEB AND IOD: They WILL protect Trademarked names](#) — [Merlin](#), October 14 @ 4:31 AM (0/0)
- [MORE DISCUSSION](#) [◆◆](#) <http://www.icann.com/mbx/offtopic/> — [BxB](#), October 13 @ 11:33 PM (0/0)
- [After having read most of the applications: .WEB and IOD are the obvious choices](#) — [saskia](#), October 13 @ 11:08 PM (1/1)
 - [Internet Spirit](#) — [Merlin](#), October 13 @ 11:30 PM (0/0)
- [It is fair that ICANN accepts .web registry by IODesign](#) — [fabrcop](#), October 13 @ 8:26 PM (1/1)
 - [Here is the correct link URL \(see my previous post\)](#) — [fabrcop](#), October 13 @ 9:10 PM (0/0)
- [What's that Afilias.TV site about??](#) — [spewtlds](#), October 13 @ 8:20 PM (1/10)
 - [self-interests?](#) — [getserious](#), October 13 @ 8:24 PM (4/9)
 - [Not a serious group?!](#) — [sstallings](#), November 1 @ 1:11 PM (0/0)
 - [How short sighted](#) — [cgrady](#), October 13 @ 10:43 PM (0/0)
 - [I Am IOD Supporter And Serious Business Owner](#) — [pilot](#), October 13 @ 8:41 PM (1/1)
 - [Another serious business person supporting IOD](#) — [mjordan](#), October 14 @ 3:08 PM (0/0)
 - [Self-interests? Of course!](#) — [JConnors](#), October 13 @ 8:39 PM (3/4)
 - [Pardon Me, But I did not Pre-register anything...I REGISTERED my DOT WEB](#) — [Gregory W. Krajewski](#), October 14 @ 5:58 AM (1/1)
 - [IOD's PRE-REGISTRATION](#) — [Webster](#), October 14 @ 11:32 PM (0/0)
 - [You are either very confused or have a self interest of your own.](#) — [cgrady](#), October 13 @ 11:31 PM (0/0)
 - [You don't have a clue what you're talking about.](#) — [Infinity](#), October 13 @ 10:42 PM (0/0)
- [Previous Post about IOD and .Web](#) — [Merlin](#), October 13 @ 7:52 PM (2/3)
 - [IOD = GREAT CUSTOMER SERVICE!](#) — [first1](#), October 14 @ 5:03 AM (0/0)
 - [customer service](#) — [larreeee](#), October 14 @ 12:15 AM (1/1)
 - [Customer satisfaction is a result of integrity](#) — [PHXbird](#), October 14

[Does NSI want a bigger monopoly??](#) — [manny](#), October 16 @ 4:39 AM (0/0)

- [JConnors then why ".web"?](#) — [anthony](#), October 14 @ 1:17 PM (0/0)
- [Your Wrong JConnors](#) — [first1](#), October 14 @ 4:55 AM (0/0)
- [Reading applications](#) — [PHXbird](#), October 13 @ 11:41 PM (0/0)
- [You miss a point.](#) — [Infinity](#), October 13 @ 9:42 PM (1/1)
 - [Reply To Infinity](#) — [pilot](#), October 13 @ 9:50 PM (0/0)
- [We are basing our comments of tangible reality not paper promises in the form of applications.](#) — [cgrady](#), October 13 @ 9:33 PM (1/1)
 - [Here Here!](#) — [marshm](#), October 14 @ 3:22 AM (0/0)
- [.Web is excellent, Image Online have to be the winner](#) — [Carlos](#), October 13 @ 6:22 PM (2/13)
 - [Only a IOD for .web](#) — [ciudad](#), October 15 @ 12:01 AM (0/0)
 - [.web as new TLD operated by IODesign](#) — [marshm](#), October 13 @ 6:33 PM (3/11)
 - [.web](#) — [netjim](#), October 16 @ 1:10 AM (0/0)
 - [I agree](#) — [stuart](#), October 13 @ 8:25 PM (0/0)
 - [.web TLD](#) — [PHXbird](#), October 13 @ 7:03 PM (1/8)
 - [.WEB Registry - IODesign is the ONLY choice](#) — [huckers](#), October 15 @ 9:28 PM (1/7)
 - [UK - Father of the Internet!!](#) — [Georgia_Flyer](#), October 16 @ 6:27 PM (4/6)
 - [Rule Britannia MKII](#) — [trademarklaw](#), October 19 @ 4:28 PM (0/0)
 - [Rule Britannia](#) — [trademarklaw](#), October 19 @ 4:27 PM (0/0)
 - [alert! aol user!](#) — [DotMorons](#), October 17 @ 1:41 AM (1/2)
 - [Alert! Win 98 User!](#) — [spewtlds](#), October 18 @ 3:58 PM (1/1)
 - [Followup](#) — [spewtlds](#), October 18 @ 4:01 PM (0/0)
 - [it was during Al Gore's visit to the UK](#) — [abigailc](#), October 16 @ 11:15 PM (0/0)

EXHIBIT JZ-44



New gTLD Application Submitted to ICANN by: Web.com Group, Inc.

String: web

Originally Posted: 13 June 2012

Application ID: 1-1009-97005

Applicant Information

1. Full legal name

Web.com Group, Inc.

2. Address of the principal place of business

12808 Gran Bay Parkway, West
Jacksonville FL 32258
US

3. Phone number

00 904 680 6600

4. Fax number

00 904 880 0350

5. If applicable, website or URL

<http://www.web.com>

Primary Contact

6(a). Name

Mr. Robert Conant Wiegand

6(b). Title

Senior Vice President

6(c). Address

6(d). Phone Number

+00 904 680 6958

6(e). Fax Number

6(f). Email Address

bwiegand@web.com

Secondary Contact

7(a). Name

Mr. Matthew Patrick McClure

7(b). Title

Chief Legal Officer

7(c). Address

7(d). Phone Number

00 904 680 6997

7(e). Fax Number

7(f). Email Address

mmclure@web.com

Proof of Legal Establishment

8(a). Legal form of the Applicant

Corporation

8(b). State the specific national or other jurisdiction that defines the type of entity identified in 8(a).

General Corporation Law of the State of Delaware

8(c). Attach evidence of the applicant's establishment.

Attachments are not displayed on this form.

9(a). If applying company is publicly traded, provide the exchange and symbol.

NASDAQ: WWW

9(b). If the applying entity is a subsidiary, provide the parent company.

9(c). If the applying entity is a joint venture, list all joint venture partners.

Applicant Background

11(a). Name(s) and position(s) of all directors

Anton J. Levy	Director
David L. Brown	Chairman of the Board
Deborah H. Quazzo	Director
Hugh M. Durden	Director
Phillip J. Facchina	Director
Robert S. McCoy	Director
Timothy I. Maudlin	Director

11(b). Name(s) and position(s) of all officers and partners

David L. Brown	CEO & President
Jason M. Teichman	EVP and Chief Marketing Officer
Kevin M. Carney	EVP and Chief Financial Officer
Matthew P. McClure	Chief Legal Officer & Secretary
Roseann Duran	EVP and Chief People Officer

11(c). Name(s) and position(s) of all shareholders holding at least 15% of shares

NWS Holdings	Not Applicable
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11(d). For an applying entity that does not have directors, officers, partners, or shareholders: Name(s) and position(s) of all individuals having legal or executive responsibility

Applied-for gTLD string

13. Provide the applied-for gTLD string. If an IDN, provide the U-label.

web

14(a). If an IDN, provide the A-label (beginning with "xn--").

14(b). If an IDN, provide the meaning or restatement of the string in English, that is, a description of the literal meaning of the string in the opinion of the applicant.

14(c). If an IDN, provide the language of the label (in English).

14(c). If an IDN, provide the language of the label (as referenced by ISO-639-1).

14(d). If an IDN, provide the script of the label (in English).

14(d). If an IDN, provide the script of the label (as referenced by ISO 15924).

14(e). If an IDN, list all code points contained in the U-label according to Unicode form.

15(a). If an IDN, Attach IDN Tables for the proposed registry.

Attachments are not displayed on this form.

15(b). Describe the process used for development of the IDN tables submitted, including consultations and sources used.

15(c). List any variant strings to the applied-for gTLD string according to the relevant IDN tables.

16. Describe the applicant's efforts to ensure that there are no known operational or rendering problems concerning the applied-for gTLD string. If such issues are known, describe steps that will be taken to mitigate these issues in software and other applications.

Web.com Group, Inc. ("Web.com") has taken a number of steps, including consulting with Verisign, our registry services provider to ensure that there are no known operational or rendering problems concerning the .web gTLD string.

Many software applications conduct software validity checks. Applications like web browsers and desktop software will validate the use of URLs either by a validation of the known gTLDs and/or the length of the string. The gTLDs delegated during the 2004 round experienced universal acceptance issues that for the most part are resolved today.

Upon delegation of .web, Web.com intends to conduct thorough integration testing with all major software applications. Further, Web.com intends to assist customers of the .web gTLD as issues arise. Web.com understands that these items cannot be remedied alone, but Web.com will collaborate with software vendors about issues as they are discovered to ensure seamless adoption.

17. (OPTIONAL) Provide a representation of the label according to the International Phonetic Alphabet (<http://www.langsci.ucl.ac.uk/ipa/>).

Mission/Purpose

18(a). Describe the mission/purpose of your proposed gTLD.

18(a). Describe the mission/purpose of your proposed gTLD.

Web.com Group, Inc ("Web.com") has been in the business of helping our customers establish their online presence for over 15 years. Following our acquisition of Register.com in July 2010 and the subsequent acquisition of Network Solutions, LLC, the oldest ICANN accredited registrar, in October 2011, we have become one of the largest domain name registrars in the world with approximately 3 million customers. Web.com offers a variety of TLDs and a full suite of domain-name services, including registration, management,

renewal, expiration protection and privacy services.

The creation of a .web gTLD will help to fulfill ICANN's mission of providing more competition in the online marketplace and Web.com is the perfect candidate for operating .web given its experience, global reach, and brand recognition.

Why .web?

Web.com knows from years of experience that the .com gTLD has played a revolutionary role in the advancement of global commerce and culture. In addition, the .com gTLD has had a powerful and democratizing impact, providing avenues for anyone to participate in online discourse and a growing market. There are, however, a finite number of useful second-level domains that can be applied for in .com, as ICANN knows and understands. Often other gTLDs, such as .org, .info, .biz and others either are unavailable or are not a good fit for a potential second-level domain.

In looking to expand the gTLD landscape beyond the existing robustness of gTLD offerings, an easy-to-remember and intuitively logical gTLD such as .web is a relevant addition. Consumers will instantly understand that a .web domain is an Internet website thereby ensuring quick adoption by users. Due to its ubiquitous nature, .web will compete directly with all gTLDs, both existing ones and others to be approved by ICANN. It has universal appeal to anyone looking to operate on the World Wide Web. Not only will .web introduce a new and previously unavailable range of domain choices to businesses and individuals around the world but it could also serve as a platform for a number of innovative domain-based services.

The .web gTLD will help customers launch and leverage their presence on the Internet. As a leading global provider of online marketing services to small businesses, Web.com recognizes that finding a relevant and memorable domain name can be challenging. Since many keywords and descriptive phrases associated with existing TLDs have already been registered, it is often difficult to pinpoint a domain name which contains an acceptable number of characters. Consequently, prospective registrants are many times unable to secure a unique and adequate name.

The availability of .web domains will spark competition across all industries engaging customers online by providing more opportunities for registrants to secure easily found domains. Consumer choice will increase, and in doing so, online operators will seek ways to differentiate themselves from their competition with proactive steps to build consumer trust and confidence.

Introducing .web as a gTLD choice also will inject additional inventory into the domain name marketplace. As such, it will increase competition within the Internet registry space, as well as provide avenues for increased registrar competition.

Why Web.com?

As the sole owner of the Web.com® Trademark--issued by the U.S. Patent and Trademark Office-- Web.com seeks to be the sole registry operator for the .web gTLD. Historically, Web.com has offered and will continue to provide pre-registration service for the .web gTLD through www.register.web.com. We remain committed to promoting .web as a new gTLD and to expanding the competitive landscape that permeates the Internet.

Founded in 1997 as Atlantic Teleservices, Web.com has evolved to become a leading provider of Internet services for small- to medium-sized businesses ("SMBs"). Web.com is the parent company of two global domain name registrars, and further meets the Internet needs of consumers and businesses throughout their lifecycle with affordable value-added services. These services include domain-name registration; website design; search engine optimization; search

engine marketing; social media and mobile products; local sales leads; ecommerce solutions; and call center services.

Headquartered in Jacksonville, FL, USA, Web.com is a publicly traded company (Nasdaq: WWW) serving nearly three million customers, with more than 1,700 global employees in fourteen locations in North America, South America and the United Kingdom. In recognition of its rapid progress, Web.com has appeared on Deloitte's Technology Fast 500™ list in each of the past two years.

One of our primary corporate goals is to provide a broad range of online services and products that enable SMBs to establish, maintain, promote, and optimize their web presence. By providing a comprehensive and best-in-class suite of services, we are able to deliver solutions that enable small and medium-sized businesses to compete and succeed online. Customers can choose to purchase 'a la carte' solutions for specific issues, or subscribe to bundled products that meet a variety of needs.

Web.com brings a wealth of experience in providing a seamless process for customers from the first point of registration through the growth of their Internet properties. Following our acquisition of Register.com in July 2010 and the subsequent acquisition of Network Solutions in October 2011, we have become one of the largest domain name registrars in the world. Web.com offers a variety of TLDs and a full suite of domain-name services, including registration, management, renewal, expiration protection and privacy services. Web.com is also a prominent player in the Internet community through participation in numerous working groups and organizations including the Certificate Authentication Board, Internet Corporation for Assigned Names and Numbers (ICANN) and the Internet standards development community.

Additionally, since the .web gTLD mirrors the Web.com brand, trademarks, and the character string associated with our corporate website address (www.web.com), we believe that Web.com should be the sole operator and administrator of the .web gTLD. The issuance of the .web gTLD to anyone other than Web.com would infringe on the trademark rights in Web.com and be confusingly similar to domains currently in use by Web.com such as www.register.web.com and www.dot.web.com.

18(b). How do you expect that your proposed gTLD will benefit registrants, Internet users, and others?

18(b). How proposed gTLD will benefit registrants, Internet users, and others.

The .web gTLD will benefit registrants, Internet users, and others in a number of ways:

- Increase the domain-name extension inventory: An expanding global population results in more Internet users, coupled with increasing demand for domain name choices. The .web gTLD provides alternatives in every possible imagining of a website, from ecommerce to promotion of free expression.
- Increased availability of generic word domain names. For the first time in decades, generic names that have been locked down by registrants in existing gTLDs will be available in a new and easy-to-remember gTLD, which increases competition and benefits Internet users.
- Increase online innovation: New online properties with the .web gTLD will spur competitors to innovate in ways that will empower consumers, enabling communication instantaneously with others in their own communities and worldwide, at a low cost relative to traditional forms of media. The

Internet's unique attributes create new opportunities to collaborate, exchange ideas, and promote scientific, cultural, and economic progress. These opportunities will increase when .web is introduced by ICANN and implemented and operated by Web.com.

Web.com is committed to providing best-in-class service to customers by maintaining our position as an industry leader. Our goal is to enable online users to expand their web presence and we are committed to offering a greater choice in top level domain extensions.

18(b)(i) What is the goal of your proposed TLD in terms of areas of specialty, service levels, of reputation?

Many gTLDs introduced by ICANN will, by their nature, appeal only to certain segments of the online population, whether those communities are industries, ethnicities, or other collections of like-minded individuals and organizations. We are hopeful that the .web gTLD will have the same popularity as that of .com.

Web.com has the scalability and processes required to meet the challenges anticipated with the .web gTLD. Today we manage over 8 million domain names across hundreds of TLDs. We are committed to servicing and/or providing domain-name resolution services that adhere to industry standards. Following our existing standards of industry benchmark performance, we will continuously monitor and proactively defend the .web infrastructure and associated services in order to provide reliable services for each registrant in areas of specialty, service levels, and reputation:

- **Specialty:** As the first domain-name ICANN-accredited registrar, Web.com's Network Solutions subsidiary brings an unprecedented 25 years of domain industry experience to the community as a whole. The .web gTLD will be the baseline by which customers can incorporate new generation web-based technologies, enabling their web presence to be a highly efficient and effective communication mechanism. The experience and trust associated with Web.com will help ensure that outcome.

- **Service Levels:** Web.com has a long history of succeeding in its mission of providing world-class domain registration services. Our longstanding commitment to the highest service levels will be replicated with .web. Furthermore, we will meet or exceed the service levels mandated within the Registry Agreement enforced by ICANN as it pertains, but not limited, to the registration and resolution of the .web gTLD zone. Web.com is pleased to be working with Verisign, one of the leading Internet infrastructure companies, to launch .web. Verisign's unmatched performance in the operation of existing TLDs will ensure a high degree of service, stability and reliability.

- **Reputation:** Given our success over the course of the last 15 years, we are confident that Web.com will continue to serve customers with the best in class service as it pertains to the .web gTLD. Given the proactive safeguards we incorporate, and will continue to incorporate within the .web gTLD, we believe potential customers will register a .web gTLD in order to be associated with a secure, reliable and scalable gTLD. At Web.com, we believe that a website is only as good as the services and support behind it. With the .web gTLD, we have the opportunity to bring this same level of commitment to a gTLD.

18(b)(ii) What do you anticipate your proposed TLD will add to the current space, in terms of competition, differentiation, or innovation?

As stated in 18(a) above, the .web gTLD will have a dramatic impact by increasing competition, providing more differentiation for customers and consumers, while driving innovation.

- Competition: The addition of a .web gTLD will increase competition across all vertical online platforms. Registrars will compete to offer .web and meet the high demand for .web second-level TLDs. Vendors in the online marketplace will seek to expand their existing footprint or pioneer new products and services with a fresh .web website. The universal appeal of a .web URL will provide competition to every TLD, both broad-based existing ones--such as .com, .org, .biz and .info--as well as others that will be approved by ICANN, whether broad-based or narrowly targeted. Internet users will benefit from the dramatically accelerated competitive environment resulting from ICANN's adoption of .web operated by Web.com.

- Differentiation: The .web gTLD will quickly become as ubiquitous as .com. The .web gTLD will be the most versatile gTLD on the World Wide Web. A brand name company might choose .com; a non-profit .org; a start-up .biz; a resource site .info; and so on. But every one of those organizations' sites would be perfectly compatible with a .web second-level domain. More narrow gTLDs will provide differentiation in certain niches and markets; .web will do so in every conceivable area on the Internet, from commerce to information to community-building. The introduction of generics under a new gTLD also will provide differentiated approaches to reaching Internet users.

- Innovation: There is little room for continued innovation by .com registrants seeking to compete with and differentiate themselves from other .com registrants. That is not a negative reflection on .com, but rather the fact that there are a finite number of short and memorable second-level domains. With many keywords and descriptive phrases already registered, incentives to innovate decrease with each year. A land rush of .web addresses will reverse that decline and drive new innovation in web delivery and customer service.

18(b)(iii) What goals does your proposed TLD have in terms of user experience?

Web.com will provide rewarding user experiences on two levels:

- Registrants: Web.com will incorporate the ability to allow various segments of the market to take advantage of registering the desired .web domain name. This includes providing the IP community with the ability to secure the .web domains affiliated or associated with their brands during a proposed Sunrise period, prior to making registrations publicly available to all. This registrant service is a natural extension of decades of experience on the part of Web.com and its holdings. Web.com may also enable registrants who have already purchased domains in other gTLDs the ability to register those domains in the .web gTLD. For registrants who are looking to improve their domain name or looking to purchase a new one, having .web will open up a new swath of choices in a gTLD that is new, fresh and directly tied to their goals of establishing their web presence. Upon enabling registrations to the general public, Web.com will incorporate a Go to Market Launch plan that will focus on ease of use, perspective registrant outreach program, and proactive communication associated with turn-key customer service. We intend to maintain our leading position that includes the lowest churn rates in the industry, which will be critical to the rollout of .web and its long-term success as a vibrant gTLD.

- Internet users: For users of .web gTLD websites, our enhanced efforts to prevent abusive behavior to protect the rights of others will result in a user experience that is more stable and secure than what they currently experience in other gTLDs. We fully recognize that eliminating abusive and fraudulent behavior is a difficult challenge but it is one that we will stress as we develop our plans to launch .web. Web.com plans to vigorously enforce all provisions we have outlined in the responses to Questions 28 and 29 to ensure a positive experience for all users of the .web gTLD.

18(b)(iv) Provide a complete description of the applicant's intended registration policies in support of the goals listed above.

Web.com takes its responsibilities in the operation of the .web gTLD very seriously. We have implemented a series of measures that, when taken together, will ensure that registrants have the ability to register names of their choice while ensuring that policies are in place to prevent and mitigate abusive behavior as well as protect the rights of others.

These registration policies include:

- An Acceptable Use Policy (AUP) that clearly defines what is considered abuse and what registrants may and may not do with their .web domain names
- A name selection policy that ensures compliance with ICANN mandated restrictions on second level domains
- Support for Uniform Rapid Suspension (URS) and Uniform Domain-Name Dispute-Resolution Policy (UDRP) to mitigate trademark infringement

The gTLD will be launched in multiple phases, ensuring a stable, secure, and controlled introduction:

- Sunrise A: This initial phase will allow the trademark community the ability to secure the .web domains associated with their brands for a 60-day period - double the ICANN minimum.
- Possible Sunrise B: We are also considering a second phase which might be available for previously registered names in other gTLDs.
- Landrush: Following the Sunrise phases, this phase will allow domain registrants to register domains at a premium price point. Multiple submissions will be auctioned, with the auction provider to be named at a later date.
- General Availability: This final phase will be open to the general public. Domains may be registered on a first-come/first-serve basis.

18(b)(v) Will your proposed TLD impose any measures for protecting the privacy or confidential information of registrants or users? If so, please describe any such measures.

Web.com respects the privacy of its customers and the visitors and users of its websites. The .web gTLD will be governed by a strict Privacy Policy to ensure the privacy of information for registrants as well as users. Web.com is an industry leader in providing transparent and rigorous policies on how sensitive information will be used, as well as preventing unauthorized access to information through vigilant use of the latest technological innovations. We will continue our commitment to privacy for our customers and website users by publicly posting our privacy policies on the registry website. Web.com will ensure compliance with all laws and regulations that govern privacy issues.

18(b)(vi) Describe whether and in what ways outreach and communications will help to achieve your projected benefits.

Web.com enables regular dialogue with its registrants by establishing and maintaining clear and secure channels of communication. Web.com has every incentive to ensure that potential and existing .web registrants understand privacy and security measures to protect their information and to assist in their adherence to the AUP in their efforts to protect Internet users.

No other registry is better equipped to deal with the communication challenges inherent in the rollout and maintenance of a gTLD with the appeal and anticipated popularity of .web.

To ensure the success of the .web launch, the company will undertake a global marketing and advertising campaign to create customer awareness and interest in the features and benefits of the .web gTLD.

18(c). What operating rules will you adopt to eliminate or minimize social costs?

18(c) What operating rules will you adopt to minimize social costs (e.g., time or financial resources costs, as well as various types of consumer vulnerabilities? What other steps will you take to minimize negative consequences/costs imposed upon consumers?

As stated earlier, we take our responsibilities in this area very seriously. To demonstrate our commitment to make the .web gTLD more resistant to abusive behavior than other gTLDs that currently exist, Web.com has explored various mechanisms to help prevent abusive registrations. We were particularly impressed with the set of 31 Proposed Security, Stability and Resiliency Requirements for Financial TLDs that were developed by the Security Standards Working Group (SSWG) under the guidance of the financial services industry. Following their recommendation that all potential applicants look at these standards for their own TLDs, Web.com has completed a thorough review to determine which ones might enhance the .web gTLD experience. While not all of the proposed standards are applicable to the .web gTLD, we will endeavor to implement several of them to aid in our efforts to prevent and mitigate abusive registrations. In addition to the mechanisms described in 18 (b) (iv), we will undertake the following efforts:

- An Acceptable Use policy that clearly defines what is considered abuse and what registrants may and may not do with their domain names
- A seasoned abuse mitigation team that has years of experience in dealing with these issues
- Technological measures for removal of orphan glue records
- Efforts and measures to promote accurate and complete 'Whois'
- Requirements for .web accredited registrars to enact measures in support of these efforts
- Extended Sunrise services
- Extended trademark claims service
- Name Selection Policy
- Acceptable Use Policy
- Support for URS and UDRP
- PDDRP
- Rapid takedown or suspension where necessary
- Anti-Abuse Process
- Enhanced Authentication
- Malware Code Identification
- DNSSEC signing service
- Biannual 'WHOIS' Verification
- Participation in anti-abuse community activities

18(c)(i) How will multiple applications for a particular domain name be resolved, for example, by auction or on a first-come/first-serve basis?

Web.com will launch the .web gTLD in the following phases:

- Sunrise A: This initial phase will allow the trademark community the ability to secure the .web domains associated with their brands for a 60-day period.

- Possible Sunrise B: This second phase could be available for previously registered names in other gTLDs.
- Landrush: Following the Sunrise phases, Landrush will allow registrants to register domains at a premium price point. Multiple submissions for the same domain name will be resolved through auction, with an auction provider to be named at a later date.
- General Availability: This final phase will be open to the general public. Domains may be registered on a first-come/first-serve basis.

18(c)(ii) Explain any cost benefits for registrants you intend to implement (e.g., advantageous pricing, introductory discounts, bulk registration discounts).

Web.com, like ICANN, has every incentive to see the .web gTLD become a ubiquitous online presence, serving Internet users globally and spurring online innovation. As such, we will institute necessary incentives to encourage rapid rollout and growing adoption of the .web gTLD, with policies to be developed and adopted in the future as necessary.

18(c)(iii) Note that the Registry Agreement requires that registrars be offered the option to obtain initial domain name registrations for periods of one to ten years at the discretion of the registrar, but no greater than ten years. Additionally, the Registry Agreement requires advance written notice of price increases. Do you intend to make contractual commitments to registrants regarding the magnitude of price escalation? If so, please describe your plans.

Web.com intends to price its domains competitively to maximize sales, while at the same time ensuring profitable, secure, and sustainable operations. It is premature to elaborate on specific policies at this stage in the process, but we intend to be responsive to market demands and share ICANN's desire to ensure a rapid spread and adoption of .web. Web.com will fully comply with all necessary and recommended notification requirements in the event that price increases are necessary.

Community-based Designation

19. Is the application for a community-based TLD?

No

20(a). Provide the name and full description of the community that the applicant is committing to serve.

20(b). Explain the applicant's relationship to the community identified in 20(a).

20(c). Provide a description of the community-based purpose of the applied-for gTLD.

20(d). Explain the relationship between the applied-for gTLD string and the community identified in 20(a).

20(e). Provide a description of the applicant's intended registration policies in support of the community-based purpose of the applied-for gTLD.

20(f). Attach any written endorsements from institutions/groups representative of the community identified in 20(a).

Attachments are not displayed on this form.

Geographic Names

21(a). Is the application for a geographic name?

No

Protection of Geographic Names

22. Describe proposed measures for protection of geographic names at the second and other levels in the applied-for gTLD.

In order to comply with ICANN requirements and GAC recommendations regarding the protection of geographic names, Web.com Group, Inc. ("Web.com") has developed and will implement the following measures to protect geographical names at the second and all other levels in the .web gTLD:

1. Rules for Reserving Geographical Names

Web.com will comply with Specification 5 "Schedule of Reserved Names at the Second Level in gTLD Registries" Section 5 titled "Country and Territory Names." The country and territory names contained in the following

internationally recognized lists shall be initially reserved at the second level and at all other levels within the .web gTLD at which the Web.com provides for registrations:

a. the short form (in English) of all country and territory names contained on the ISO 3166-1 list, as updated from time to time, including the European Union, which is exceptionally reserved on the ISO 3166-1 list, and its scope extended in August 1999 to any application needing to represent the name European Union;

b. the United Nations Group of Experts on Geographical Names, Technical Reference Manual for the Standardization of Geographical Names, Part III Names of Countries of the World; and

c. the list of United Nations member states in 6 official United Nations languages prepared by the Working Group on Country Names of the United Nations Conference on the Standardization of Geographical Names.

2. Incorporation of GAC recommendation regarding second level geographic domains

Web.com will review and seriously consider suggestions from global government entities, public authorities and the IGO's regarding additional names with national or geographic significant at the second level.

Web.com will consider any claims of abuse, including abuse of names with national or geographic significance as serious offenses. The Abuse Prevention and Mitigation Procedures for the .web gTLD will ensure that governments, public authorities or IGO's have the ability to raise cases of concern.

3. Rules for registration and employment of geographical names.

If a decision is made by Web.com to release names reserved in Section 1 above, Web.com will follow the policy and procedures outlined in Specification 5 of the Registry agreement and will work effectively to reach agreement with the applicable government(s), provided, further, that Web.com may also propose release of these reservations, subject to review by ICANN's Governmental Advisory Committee and approval by ICANN.

Registry Services

23. Provide name and full description of all the Registry Services to be provided.

1 CUSTOMARY REGISTRY SERVICES

Please note; all figures, tables and diagrams referenced in the following response can be found in attachment titled "Attachment dot web Q23."

As Web.com Group, Inc.'s ("Web.com") selected provider of backend registry services, Verisign provides a comprehensive system and physical security solution that is designed to ensure a TLD is protected from unauthorized disclosure, alteration, insertion, or destruction of registry data. Verisign's system addresses all areas of security including information and policies, security procedures, the systems development lifecycle, physical security, system hacks, break-ins, data tampering, and other disruptions to operations. Verisign's operational environments not only meet the security

criteria specified in its customer contractual agreements, thereby preventing unauthorized access to or disclosure of information or resources on the Internet by systems operating in accordance with applicable standards, but also are subject to multiple independent assessments as detailed in the response to Question 30, Security Policy. Verisign's physical and system security methodology follows a mature, ongoing lifecycle that was developed and implemented many years before the development of the industry standards with which Verisign currently complies. Please see the response to Question 30, Security Policy, for details of the security features of Verisign's registry services.

Verisign's registry services fully comply with relevant standards and best current practice RFCs published by the Internet Engineering Task Force (IETF), including all successor standards, modifications, or additions relating to the DNS and name server operations including without limitation RFCs 1034, 1035, 1982, 2181, 2182, 2671, 3226, 3596, 3597, 3901, 4343, and 4472. Moreover, Verisign's Shared Registration System (SRS) supports the following IETF Extensible Provisioning Protocol (EPP) specifications, where the Extensible Markup Language (XML) templates and XML schemas are defined in RFC 3915, 5730, 5731, 5732, 5733, and 5734. By strictly adhering to these RFCs, Verisign helps to ensure its registry services do not create a condition that adversely affects the throughput, response time, consistency, or coherence of responses to Internet servers or end systems. Besides its leadership in authoring RFCs for EPP, Domain Name System Security Extensions (DNSSEC), and other DNS services, Verisign has created and contributed to several now well-established IETF standards and is a regular and long-standing participant in key Internet standards forums.

Figure 23-1 summarizes the technical and business components of those registry services, customarily offered by a registry operator (i.e., Verisign), that support this application. These services are currently operational and support both large and small Verisign-managed registries. Customary registry services are provided in the same manner as Verisign provides these services for its existing gTLDs.

Through these established registry services, Verisign has proven its ability to operate a reliable and low-risk registry that supports millions of transactions per day. Verisign is unaware of any potential security or stability concern related to any of these services.

Registry services defined by this application are not intended to be offered in a manner unique to the new generic top-level domain (gTLD) nor are any proposed services unique to this application's registry.

As further evidence of Verisign's compliance with ICANN mandated security and stability requirements, Verisign allocates the applicable RFCs to each of the five customary registry services (items A - E above). For each registry service, Verisign also provides evidence in Figure 23-2 of Verisign's RFC compliance and includes relevant ICANN prior-service approval actions.

1.1 Critical Operations of the Registry

i. Receipt of Data from Registrars Concerning Registration of Domain Names and Name Servers

See Item A in Figure 23-1 and Figure 23-2.

ii. Provision to Registrars Status Information Relating to the Zone Servers

Verisign is Web.com's selected provider of backend registry services. Verisign registry services provisions to registrars status information relating to zone servers for the gTLD. The services also allow a domain name to be updated with clientHold, serverHold status, which removes the domain name server details from zone files. This ensures that DNS queries of the domain name are not resolved temporarily. When these hold statuses are

removed, the name server details are written back to zone files and DNS queries are again resolved. Figure 23-3 describes the domain name status information and zone insertion indicator provided to registrars. The zone insertion indicator determines whether the name server details of the domain name exist in the zone file for a given domain name status. Verisign also has the capability to withdraw domain names from the zone file in near real time by changing the domain name statuses upon request by customers, courts, or legal authorities as required.

iii. Dissemination of TLD Zone Files

See Item B in Figure 23-1 and Figure 23-2.

iv. Operation of the Registry Zone Servers

Verisign is Web.com's selected provider of backend registry services. Verisign, as a company, operates zone servers and serves DNS resolution from 76 geographically distributed resolution sites located in North America, South America, Africa, Europe, Asia, and Australia. Currently, 17 DNS locations are designated primary sites, offering greater capacity than smaller sites comprising the remainder of the Verisign constellation. Verisign also uses Anycast techniques and regional Internet resolution sites to expand coverage, accommodate emergency or surge capacity, and support system availability during maintenance procedures. Verisign plans to operate Web.com's .web gTLD from a minimum of eight of its primary sites (two on the East Coast of the United States, two on the West Coast of the United States, two in Europe, and two in Asia) and expand resolution sites based on traffic volume and patterns. Further details of the geographic diversity of Verisign's zone servers are provided in the response to Question 34, Geographic Diversity. Moreover, additional details of Verisign's zone servers are provided in the response to Question 32, Architecture and the response to Question 35, DNS Service.

v. Dissemination of Contact and Other Information Concerning Domain Name Server Registrations

See Item C in Figure 23-1 and Figure 23-2.

2 OTHER PRODUCTS OR SERVICES THE REGISTRY OPERATOR IS REQUIRED TO PROVIDE BECAUSE OF THE ESTABLISHMENT OF A CONSENSUS POLICY

Verisign, Web.com's selected provider of backend registry services, is a proven supporter of ICANN's consensus-driven, bottom-up policy development process whereby community members identify a problem, initiate policy discussions, and generate a solution that produces effective and sustained results. Verisign currently provides all of the products or services (collectively referred to as services) that the registry operator is required to provide because of the establishment of a Consensus Policy. For the .web gTLD, Verisign implements these services using the same proven processes and procedures currently in-place for all registries under Verisign's management. Furthermore, Verisign executes these services on computing platforms comparable to those of other registries under Verisign's management. Verisign's extensive experience with consensus policy required services and its proven processes to implement these services greatly minimize any potential risk to Internet security or stability. Details of these services are provided in the following subsections. It shall be noted that consensus policy services required of registrars (e.g., Whois Reminder, Expired Domain) are not included in this response. This exclusion is in accordance with the direction provided in the question's Notes column to address registry operator services.

2.1 Inter-Registrar Transfer Policy (IRTP)

Technical Component: In compliance with the IRTP consensus policy, Verisign, Web.com's selected provider of backend registry services, has designed its registration systems to systematically restrict the transfer of domain names within 60 days of the initial create date. In addition, Verisign has implemented EPP and "AuthInfo" code functionality, which is used to further authenticate transfer requests. The registration system has been designed to

enable compliance with the five-day transfer grace period and includes the following functionality:

- Allows the losing registrar to proactively 'ACK' or acknowledge a transfer prior to the expiration of the five-day transfer grace period
- Allows the losing registrar to proactively 'NACK' or not acknowledge a transfer prior to the expiration of the five-day transfer grace period
- Allows the system to automatically ACK the transfer request once the five-day transfer grace period has passed if the losing registrar has not proactively ACK'd or NACK'd the transfer request.

Business Component: All requests to transfer a domain name to a new registrar are handled according to the procedures detailed in the IRTP. Dispute proceedings arising from a registrar's alleged failure to abide by this policy may be initiated by any ICANN-accredited registrar under the Transfer Dispute Resolution Policy. Web.com's compliance office serves as the first level dispute resolution provider pursuant to the associated Transfer Dispute Resolution Policy. As needed Verisign is available to offer policy guidance as issues arise.

Security and Stability Concerns: Verisign is unaware of any impact caused by the service on throughput, response time, consistency, or coherence of the responses to Internet servers or end-user systems. By implementing the IRTP in accordance with ICANN policy, security is enhanced as all transfer commands are authenticated using the AuthInfo code prior to processing.

ICANN Prior Approval: Verisign has been in compliance with the IRTP since November 2004 and is available to support Web.com in a consulting capacity as needed.

Unique to the TLD: This service is not provided in a manner unique to the .web gTLD.

2.2 Add Grace Period (AGP) Limits Policy

Technical Component: Verisign's registry system monitors registrars' Add grace period deletion activity and provides reporting that permits Web.com to assess registration fees upon registrars that have exceeded the AGP thresholds stipulated in the AGP Limits Policy. Further, Web.com accepts and evaluates all exemption requests received from registrars and determines whether the exemption request meets the exemption criteria. Web.com maintains all AGP Limits Policy exemption request activity so that this material may be included within Web.com's Monthly Registry Operator Report to ICANN.

Registrars that exceed the limits established by the policy may submit exemption requests to Web.com for consideration. Web.com's compliance office reviews these exemption requests in accordance with the AGP Limits Policy and renders a decision. Upon request, Web.com submits associated reporting on exemption request activity to support reporting in accordance with established ICANN requirements.

Business Component: The Add grace period (AGP) is restricted for any gTLD operator that has implemented an AGP. Specifically, for each operator:

- During any given month, an operator may not offer any refund to an ICANN-accredited registrar for any domain names deleted during the AGP that exceed (i) 10% of that registrar's net new registrations (calculated as the total number of net adds of one-year through ten-year registrations as defined in the monthly reporting requirement of Operator Agreements) in that month, or (ii) fifty (50) domain names, whichever is greater, unless an exemption has been granted by an operator.
- Upon the documented demonstration of extraordinary circumstances, a registrar may seek from an operator an exemption from such restrictions in a specific month. The registrar must confirm in writing to the operator how, at

the time the names were deleted, these extraordinary circumstances were not known, reasonably could not have been known, and were outside the registrar's control. Acceptance of any exemption will be at the sole and reasonable discretion of the operator; however "extraordinary circumstances" that reoccur regularly for the same registrar will not be deemed extraordinary.

In addition to all other reporting requirements to ICANN, Web.com identifies each registrar that has sought an exemption, along with a brief description of the type of extraordinary circumstance and the action, approval, or denial taken by the operator.

Security and Stability Concerns: Verisign is unaware of any impact, caused by the policy, on throughput, response time, consistency, or coherence of the responses to Internet servers or end-user systems.

ICANN Prior Approval: Verisign, Web.com's backend registry services provider, has had experience with this policy since its implementation in April 2009 and is available to support Web.com in a consulting capacity as needed.

Unique to the TLD: This service is not provided in a manner unique to the .web gTLD.

2.3 Registry Services Evaluation Policy (RSEP)

Technical Component: Verisign, Web.com's selected provider of backend registry services, adheres to all RSEP submission requirements. Verisign has followed the process many times and is fully aware of the submission procedures, the type of documentation required, and the evaluation process that ICANN adheres to.

Business Component: In accordance with ICANN procedures detailed on the ICANN RSEP website (<http://www.icann.org/en/registries/rsep/>), all gTLD registry operators are required to follow this policy when submitting a request for new registry services.

Security and Stability Concerns: As part of the RSEP submission process, Verisign, Web.com's backend registry services provider, identifies any potential security and stability concerns in accordance with RSEP stability and security requirements. Verisign never launches services without satisfactory completion of the RSEP process and resulting approval.

ICANN Prior Approval: Not applicable.

Unique to the TLD: gTLD RSEP procedures are not implemented in a manner unique to the .web gTLD.

3 PRODUCTS OR SERVICES ONLY A REGISTRY OPERATOR IS CAPABLE OF PROVIDING BY REASON OF ITS DESIGNATION AS THE REGISTRY OPERATOR

Web.com plans to implement a Premium Name Service as part of launch plans for the .web gTLD. Work is still proceeding on this effort but it will be modeled after similar offerings during recent TLD launches and the reserved Premium Domain Name list will comply with all necessary ICANN regulations related to such efforts. This list will be authoritative and these names will not be available during Sunrise A&B or Landrush.

Verisign, Web.com's selected backend registry services provider, has developed a Registry-Registrar Two-Factor Authentication Service that complements traditional registration and resolution registry services. In accordance with direction provided in Question 23, Verisign details below the technical and business components of the service, identifies any potential threat to registry security or stability, and lists previous interactions with ICANN to approve the operation of the service. The Two-Factor Authentication Service is currently operational, supporting multiple registries under ICANN's purview.

Web.com is unaware of any competition issue that may require the registry service(s) listed in this response to be referred to the appropriate governmental competition authority or authorities with applicable jurisdiction. ICANN previously approved the service(s), at which time it was determined that either the service(s) raised no competitive concerns or any applicable concerns related to competition were satisfactorily addressed.

3.1 Two-Factor Authentication Service

Technical Component: The Registry-Registrar Two-Factor Authentication Service is designed to improve domain name security and assist registrars in protecting the accounts they manage. As part of the service, dynamic one-time passwords augment the user names and passwords currently used to process update, transfer, and/or deletion requests. These one-time passwords enable transaction processing to be based on requests that are validated both by "what users know" (i.e., their user name and password) and "what users have" (i.e., a two-factor authentication credential with a one-time-password).

Registrars can use the one-time-password when communicating directly with Verisign's Customer Service department as well as when using the registrar portal to make manual updates, transfers, and/or deletion transactions. The Two-Factor Authentication Service is an optional service offered to registrars that execute the Registry-Registrar Two-Factor Authentication Service Agreement.

Business Component: There is no charge for the Registry-Registrar Two-Factor Authentication Service. It is enabled only for registrars that wish to take advantage of the added security provided by the service.

Security and Stability Concerns: Verisign is unaware of any impact, caused by the service, on throughput, response time, consistency, or coherence of the responses to Internet servers or end-user systems. The service is intended to enhance domain name security, resulting in increased confidence and trust by registrants.

ICANN Prior Approval: ICANN approved the same Two-Factor Authentication Service for Verisign's use on .com and .net on 10 July 2009 (RSEP Proposal 2009004) and for .name on 16 February 2011 (RSEP Proposal 2011001).

Unique to the TLD: This service is not provided in a manner unique to the .web gTLD.

Demonstration of Technical & Operational Capability

24. Shared Registration System (SRS) Performance

1 ROBUST PLAN FOR OPERATING A RELIABLE SRS

Please note; all figures, tables and diagrams referenced in the following response can be found in attachment titled "Attachment dot web Q24."

1.1 High-Level Shared Registration System (SRS) System Description
Verisign, Web.com Group, Inc.'s ("Web.com") selected provider of backend registry services, provides and operates a robust and reliable SRS that enables multiple registrars to provide domain name registration services in the top-level domain (TLD). Verisign's proven reliable SRS serves approximately 915 registrars, and Verisign, as a company, has averaged more

than 140 million registration transactions per day. The SRS provides a scalable, fault-tolerant platform for the delivery of gTLDs through the use of a central customer database, a web interface, a standard provisioning protocol (i.e., Extensible Provisioning Protocol, EPP), and a transport protocol (i.e., Secure Sockets Layer, SSL).

The SRS components include:

- Web Interface: Allows customers to access the authoritative database for accounts, contacts, users, authorization groups, product catalog, product subscriptions, and customer notification messages.
- EPP Interface: Provides an interface to the SRS that enables registrars to use EPP to register and manage domains, hosts, and contacts.
- Authentication Provider: A Verisign developed application, specific to the SRS, that authenticates a user based on a login name, password, and the SSL certificate common name and client IP address.

The SRS is designed to be scalable and fault tolerant by incorporating clustering in multiple tiers of the platform. New nodes can be added to a cluster within a single tier to scale a specific tier, and if one node fails within a single tier, the services will still be available. The SRS allows registrars to manage the .web gTLD domain names in a single architecture. To flexibly accommodate the scale of its transaction volumes, as well as new technologies, Verisign employs the following design practices:

- Scale for Growth: Scale to handle current volumes and projected growth.
- Scale for Peaks: Scale to twice base capacity to withstand "registration add attacks" from a compromised registrar system.
- Limit Database CPU Utilization: Limit utilization to no more than 50 percent during peak loads.
- Limit Database Memory Utilization: Each user's login process that connects to the database allocates a small segment of memory to perform connection overhead, sorting, and data caching. Verisign's standards mandate that no more than 40 percent of the total available physical memory on the database server will be allocated for these functions.

Verisign's SRS is built upon a three-tier architecture as illustrated in Figure 24-1 and detailed here:

- Gateway Layer: The first tier, the gateway servers, uses EPP to communicate with registrars. These gateway servers then interact with application servers, which comprise the second tier.
- Application Layer: The application servers contain business logic for managing and maintaining the registry business. The business logic is particular to each TLD's business rules and requirements. The flexible internal design of the application servers allows Verisign to easily leverage existing business rules to apply to the .web gTLD. The application servers store Web.com's data in the registry database, which comprises the third and final tier. This simple, industry-standard design has been highly effective with other customers for whom Verisign provides backend registry services.
- Database Layer: The database is the heart of this architecture. It stores all the essential information provisioned from registrars through the gateway servers. Separate servers query the database, extract updated zone and Whois information, validate that information, and distribute it around the clock to Verisign's worldwide domain name resolution sites.

Scalability and Performance. Verisign, Web.com's selected backend registry services provider, implements its scalable SRS on a supportable infrastructure that achieves the availability requirements in Specification 10. Verisign employs the design patterns of simplicity and parallelism in both its software and systems, based on its experience that these factors contribute most significantly to scalability and reliable performance. Going counter to feature-rich development patterns, Verisign intentionally minimizes the number of lines of code between the end user and the data delivered. The result is a network of restorable components that provide

rapid, accurate updates. Figure 24-2 depicts EPP traffic flows and local redundancy in Verisign's SRS provisioning architecture. As detailed in the figure, local redundancy is maintained for each layer as well as each piece of equipment. This built-in redundancy enhances operational performance while enabling the future system scaling necessary to meet additional demand created by the .web gTLD.

Besides improving scalability and reliability, local SRS redundancy enables Verisign to take down individual system components for maintenance and upgrades, with little to no performance impact. With Verisign's redundant design, Verisign can perform routine maintenance while the remainder of the system remains online and unaffected. For the .web gTLD registry, this flexibility minimizes unplanned downtime and provides a more consistent end-user experience.

1.2 Representative Network Diagrams

Figure 24-3 provides a summary network diagram of Web.com's selected backend registry services provider's (Verisign's) SRS. This configuration at both the primary and alternate-primary Verisign data centers provides a highly reliable backup capability. Data is continuously replicated between both sites to ensure failover to the alternate-primary site can be implemented expeditiously to support both planned and unplanned outages.

1.3 Number of Servers

As Web.com's selected provider of backend registry services, Verisign continually reviews its server deployments for all aspects of its registry service. Verisign evaluates usage based on peak performance objectives as well as current transaction volumes, which drive the quantity of servers in its implementations. Verisign's scaling is based on the following factors:

- Server configuration is based on CPU, memory, disk IO, total disk, and network throughput projections.
- Server quantity is determined through statistical modeling to fulfill overall performance objectives as defined by both the service availability and the server configuration.
- To ensure continuity of operations for the .web gTLD, Verisign uses a minimum of 100 dedicated servers per SRS site. These servers are virtualized to meet demand.

1.4 Description of Interconnectivity with Other Registry Systems

Figure 24-4 provides a technical overview of the Web.com's selected backend registry services provider's (Verisign's) SRS, showing how the SRS component fits into this larger system and interconnects with other system components.

1.5 Frequency of Synchronization Between Servers

As Web.com's selected provider of backend registry services, Verisign uses synchronous replication to keep the Verisign SRS continuously in sync between the two data centers. This synchronization is performed in near-real time, thereby supporting rapid failover should a failure occur or a planned maintenance outage be required.

1.6 Synchronization Scheme

Verisign uses synchronous replication to keep the Verisign SRS continuously in sync between the two data centers. Because the alternate-primary site is continuously up, and built using an identical design to the primary data center, it is classified as a "hot standby."

2 SCALABILITY AND PERFORMANCE ARE CONSISTENT WITH THE OVERALL BUSINESS APPROACH AND PLANNED SIZE OF THE REGISTRY

Verisign is an experienced backend registry provider that has developed and uses proprietary system scaling models to guide the growth of its TLD supporting infrastructure. These models direct Verisign's infrastructure scaling to include, but not be limited to, server capacity, data storage volume, and network throughput that are aligned to projected demand and usage

patterns. Verisign periodically updates these models to account for the adoption of more capable and cost-effective technologies.

Verisign's scaling models are proven predictors of needed capacity and related cost. As such, they provide the means to link the projected infrastructure needs of the .web gTLD with necessary implementation and sustainment cost. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its scaling models, Verisign derived the necessary infrastructure required to implement and sustain this gTLD. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

3 TECHNICAL PLAN THAT IS ADEQUATELY RESOURCED IN THE PLANNED COSTS DETAILED IN THE FINANCIAL SECTION

Verisign, Web.com's selected provider of backend registry services, is an experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely adjusts these staffing models to account for new tools and process innovations. These models enable Verisign to continually right-size its staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for this gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services provided to Web.com fully accounts for this personnel-related cost, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability 100 percent of the time for more than 13 years for .com, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's TLD service offerings.

Verisign projects it will use the following personnel roles, which are described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support SRS performance:

- Application Engineers: 19
- Database Administrators: 8
- Database Engineers: 3
- Network Administrators: 11
- Network Architects: 4
- Project Managers: 25
- Quality Assurance Engineers: 11
- SRS System Administrators: 13
- Storage Administrators: 4
- Systems Architects: 9

To implement and manage the .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of TLDs. Consistent with its resource modeling, Verisign periodically reviews the level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify

qualified candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its TLDs instead of creating a new entity to manage only the .web gTLD, Verisign realizes significant economies of scale and ensures its TLD best practices are followed consistently. This consistent application of best practices helps ensure the security and stability of both the Internet and this proposed gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest TLDs (i.e., .com and .net). Moreover, by augmenting existing teams, Verisign affords new employees the opportunity to be mentored by existing senior staff. This mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

4 EVIDENCE OF COMPLIANCE WITH SPECIFICATION 6 AND 10 TO THE REGISTRY AGREEMENT

Section 1.2 (EPP) of Specification 6, Registry Interoperability and Continuity Specifications. Verisign, Web.com's selected backend registry services provider, provides these services using its SRS, which complies fully with Specification 6, Section 1.2 of the Registry Agreement. In using its SRS to provide backend registry services, Verisign implements and complies with relevant existing RFCs (i.e., 5730, 5731, 5732, 5733, 5734, and 5910) and intends to comply with RFCs that may be published in the future by the Internet Engineering Task Force (IETF), including successor standards, modifications, or additions thereto relating to the provisioning and management of domain names that use EPP. In addition, Verisign's SRS includes a Registry Grace Period (RGP) and thus complies with RFC 3915 and its successors. Details of the Verisign SRS' compliance with RFC SRS/EPP are provided in the response to Question 25, Extensible Provisioning Protocol. Verisign does not use functionality outside the base EPP RFCs, although proprietary EPP extensions are documented in Internet-Draft format following the guidelines described in RFC 3735 within the response to Question 25. Moreover, prior to deployment, Web.com will provide to ICANN updated documentation of all the EPP objects and extensions supported in accordance with Specification 6, Section 1.2.

Specification 10, EPP Registry Performance Specifications. Verisign's SRS meets all EPP Registry Performance Specifications detailed in Specification 10, Section 2. Evidence of this performance can be verified by a review of the .com and .net Registry Operator's Monthly Reports, which Verisign files with ICANN. These reports detail Verisign's operational status of the .com and .net registries, which use an SRS design and approach comparable to the one proposed for the .web gTLD. These reports provide evidence of Verisign's ability to meet registry operation service level agreements (SLAs) comparable to those detailed in Specification 10. The reports are accessible at the following URL: <http://www.icann.org/en/tlds/monthly-reports/>.

In accordance with EPP Registry Performance Specifications detailed in Specification 10, Verisign's SRS meets the following performance attributes:

- EPP service availability: \langle = 864 minutes of downtime (~98%)
- EPP session-command round trip time (RTT): \langle =4000 milliseconds (ms), for at least 90 percent of the commands
- EPP query-command RTT: \langle =2000 ms, for at least 90 percent of the commands
- EPP transform-command RTT: \langle =4000 ms, for at least 90 percent of the commands

25. Extensible Provisioning Protocol (EPP)

1 COMPLETE KNOWLEDGE AND UNDERSTANDING OF THIS ASPECT OF REGISTRY TECHNICAL REQUIREMENTS

Please note; all figures, tables and diagrams referenced in the following response can be found in the attachment titled "Attachment dot web Q25." All EPP schemas can be found in the attachment titled "Attachment dot web Q25 EPP schemas."

Verisign, Web.com Group, Inc.'s ("Web.com") selected backend registry services provider, has used Extensible Provisioning Protocol (EPP) since its inception and possesses complete knowledge and understanding of EPP registry systems. Its first EPP implementation— for a thick registry for the .name generic top-level domain (gTLD)—was in 2002. Since then Verisign has continued its RFC-compliant use of EPP in multiple TLDs, as detailed in Figure 25-1.

Verisign's understanding of EPP and its ability to implement code that complies with the applicable RFCs is unparalleled. Mr. Scott Hollenbeck, Verisign's director of software development, authored the Extensible Provisioning Protocol and continues to be fully engaged in its refinement and enhancement (U.S. Patent Number 7299299 - Shared registration system for registering domain names). Verisign has also developed numerous new object mappings and object extensions following the guidelines in RFC 3735 (Guidelines for Extending the Extensible Provisioning Protocol). Mr. James Gould, a principal engineer at Verisign, led and co-authored the most recent EPP Domain Name System Security Extensions (DNSSEC) RFC effort (RFC 5910).

All registry systems for which Verisign is the registry operator or provides backend registry services use EPP. Upon approval of this application, Verisign will use EPP to provide the backend registry services for this gTLD. The .com, .net, and .name registries for which Verisign is the registry operator use an SRS design and approach comparable to the one proposed for this gTLD. Approximately 915 registrars use the Verisign EPP service, and the registry system performs more than 140 million EPP transactions daily without performance issues or restrictive maintenance windows. The processing time service level agreement (SLA) requirements for the Verisign-operated .net gTLD are the strictest of the current Verisign managed gTLDs. All processing times for Verisign-operated gTLDs can be found in ICANN's Registry Operator's Monthly Reports at <http://www.icann.org/en/tlds/monthly-reports/>.

Verisign has also been active on the Internet Engineering Task Force (IETF) Provisioning Registry Protocol (provreg) working group and mailing list since work started on the EPP protocol in 2000. This working group provided a forum for members of the Internet community to comment on Mr. Scott Hollenbeck's initial EPP drafts, which Mr. Hollenbeck refined based on input and discussions with representatives from registries, registrars, and other interested parties. The working group has since concluded, but the mailing list is still active to enable discussion of different aspects of EPP.

1.1 EPP Interface with Registrars

Verisign, Web.com's selected backend registry services provider, fully supports the features defined in the EPP specifications and provides a set of software development kits (SDK) and tools to help registrars build secure and stable interfaces. Verisign's SDKs give registrars the option of either fully writing their own EPP client software to integrate with the Shared Registration System (SRS), or using the Verisign-provided SDKs to aid them in the integration effort. Registrars can download the Verisign EPP SDKs and tools from the registrar website (<http://www.Verisign.com/domain-name-services/current-registrars/epp-sdk/index.html>).

The EPP SDKs provide a host of features including connection pooling, Secure Sockets Layer (SSL), and a test server (stub server) to run EPP tests against. One tool—the EPP tool—provides a web interface for creating EPP Extensible Markup Language (XML) commands and sending them to a configurable set of target servers. This helps registrars in creating the template XML and testing a variety of test cases against the EPP servers. An Operational Test and Evaluation (OT&E) environment, which runs the same software as the

production system so approved registrars can integrate and test their software before moving into a live production environment, is also available.

2 TECHNICAL PLAN SCOPE/SCALE CONSISTENT WITH THE OVERALL BUSINESS APPROACH AND PLANNED SIZE OF THE REGISTRY

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed and uses proprietary system scaling models to guide the growth of its TLD supporting infrastructure. These models direct Verisign's infrastructure scaling to include, but not be limited to, server capacity, data storage volume, and network throughput that are aligned to projected demand and usage patterns. Verisign periodically updates these models to account for the adoption of more capable and cost-effective technologies.

Verisign's scaling models are proven predictors of needed capacity and related cost. As such, they provide the means to link the projected infrastructure needs of the .web gTLD with necessary implementation and sustainment cost. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its scaling models, Verisign derived the necessary infrastructure required to implement and sustain the .web gTLD. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

3 TECHNICAL PLAN THAT IS ADEQUATELY RESOURCED IN THE PLANNED COSTS DETAILED IN THE FINANCIAL SECTION

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely adjusts these staffing models to account for new tools and process innovations. These models enable Verisign to continually right-size its staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for this gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability 100 percent of the time for more than 13 years for .com, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's TLD service offerings.

Verisign projects it will use the following personnel roles, which are described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support the provisioning of EPP services:

- Application Engineers: 19
- Database Engineers: 3
- Quality Assurance Engineers: 11

To implement and manage the .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of TLDs. Consistent with its resource modeling, Verisign periodically reviews the

level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify qualified candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its TLDs instead of creating a new entity to manage only the .web gTLD, Verisign realizes significant economies of scale and ensures its TLD best practices are followed consistently. This consistent application of best practices helps ensure the security and stability of both the Internet and the .web gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest TLDs (i.e., .com and .net). Moreover, by augmenting existing teams, Verisign affords new employees the opportunity to be mentored by existing senior staff. This mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

4 ABILITY TO COMPLY WITH RELEVANT RFCS

Verisign, Web.com's selected backend registry services provider, incorporates design reviews, code reviews, and peer reviews into its software development lifecycle (SDLC) to ensure compliance with the relevant RFCs. Verisign's dedicated QA team creates extensive test plans and issues internal certifications when it has confirmed the accuracy of the code in relation to the RFC requirements. Verisign's QA organization is independent from the development team within engineering. This separation helps Verisign ensure adopted processes and procedures are followed, further ensuring that all software releases fully consider the security and stability of the .web gTLD.

For the .web gTLD, the Shared Registration System (SRS) complies with the following IETF EPP specifications, where the XML templates and XML schemas are defined in the following specifications:

- EPP RGP 3915 (<http://www.apps.ietf.org/rfc/rfc3915.html>): EPP Redemption Grace Period (RGP) Mapping specification for support of RGP statuses and support of Restore Request and Restore Report (authored by Verisign's Scott Hollenbeck)
- EPP 5730 (<http://tools.ietf.org/html/rfc5730>): Base EPP specification (authored by Verisign's Scott Hollenbeck)
- EPP Domain 5731 (<http://tools.ietf.org/html/rfc5731>): EPP Domain Name Mapping specification (authored by Verisign's Scott Hollenbeck)
- EPP Host 5732 (<http://tools.ietf.org/html/rfc5732>): EPP Host Mapping specification (authored by Verisign's Scott Hollenbeck)
- EPP Contact 5733 (<http://tools.ietf.org/html/rfc5733>): EPP Contact Mapping specification (authored by Verisign's Scott Hollenbeck)
- EPP TCP 5734 (<http://tools.ietf.org/html/rfc5734>): EPP Transport over Transmission Control Protocol (TCP) specification (authored by Verisign's Scott Hollenbeck)
- EPP DNSSEC 5910 (<http://tools.ietf.org/html/rfc5910>): EPP Domain Name System Security Extensions (DNSSEC) Mapping specification (authored by Verisign's James Gould and Scott Hollenbeck)

5 PROPRIETARY EPP EXTENSIONS

Verisign, Web.com's selected backend registry services provider, uses its SRS to provide registry services. The SRS supports the following EPP specifications, which Verisign developed following the guidelines in RFC 3735, where the XML templates and XML schemas are defined in the specifications:

- IDN Language Tag (<http://www.verisigninc.com/assets/idn-language-tag.pdf>): EPP internationalized domain names (IDN) language tag extension used for IDN domain name registrations
- RGP Poll Mapping (<http://www.verisigninc.com/assets/whois-info-extension.pdf>): EPP mapping for an EPP poll message in support of Restore Request and Restore Report

- Whois Info Extension (<http://www.verisigninc.com/assets/whois-info-extension.pdf>): EPP extension for returning additional information needed for transfers
- EPP Consolidate Mapping (<http://www.verisigninc.com/assets/consolidate-mapping.txt>): EPP mapping to support a Domain Sync operation for synchronizing domain name expiration dates
- NameStore Extension (<http://www.verisigninc.com/assets/namestore-extension.pdf>): EPP extension for routing with an EPP intelligent gateway to a pluggable set of backend products and services
- Low Balance Mapping (<http://www.verisigninc.com/assets/low-balance-mapping.pdf>): EPP mapping to support low balance poll messages that proactively notify registrars of a low balance (available credit) condition. As part of the 2006 implementation report to bring the EPP RFC documents from Proposed Standard status to Draft Standard status, an implementation test matrix was completed. Two independently developed EPP client implementations based on the RFCs were tested against the Verisign EPP server for the domain, host, and contact transactions. No compliance related issues were identified during this test, providing evidence that these extensions comply with RFC 3735 guidelines and further demonstrating Verisign's ability to design, test, and deploy an RFC-compliant EPP implementation.

5.1 EPP Templates and Schemas

The EPP XML schemas are formal descriptions of the EPP XML templates. They are used to express the set of rules to which the EPP templates must conform in order to be considered valid by the schema. The EPP schemas define the building blocks of the EPP templates, describing the format of the data and the different EPP commands' request and response formats. The current EPP implementations managed by Verisign, Web.com's selected backend registry services provider, use these EPP templates and schemas, as will the .web gTLD. For each proprietary XML template/schema Verisign provides a reference to the applicable template and includes the schema. These schema can be found in the attachment titled "dot web Q25 EPP Schemas."

6 PROPRIETARY EPP EXTENSION CONSISTENCY WITH REGISTRATION LIFECYCLE

Web.com's selected backend registry services provider's (Verisign's) proprietary EPP extensions, defined in Section 5 above, are consistent with the registration lifecycle documented in the response to Question 27, Registration Lifecycle. Details of the registration lifecycle are presented in that response. As new registry features are required, Verisign develops proprietary EPP extensions to address new operational requirements. Consistent with ICANN procedures Verisign adheres to all applicable Registry Services Evaluation Process (RSEP) procedures.

26. Whois

1 COMPLETE KNOWLEDGE AND UNDERSTANDING OF THIS ASPECT OF REGISTRY TECHNICAL REQUIREMENTS

Please note; all figures, tables and diagrams referenced in the following response can be found in the attachment titled "Attachment dot web Q26."

Verisign, Web.com Group, Inc.'s ("Web.com") selected backend registry services provider, has operated the Whois lookup service for the gTLDs and ccTLDs it manages since 1991, and will provide these proven services for the .web gTLD registry. In addition, it continues to work with the Internet community to improve the utility of Whois data, while thwarting its application for abusive uses.

1.1 High-Level Whois System Description

Like all other components of Web.com's selected backend registry services

provider's (Verisign's) registry service, Verisign's Whois system is designed and built for both reliability and performance in full compliance with applicable RFCs. Verisign's current Whois implementation has answered more than five billion Whois queries per month for the TLDs it manages, and has experienced more than 250,000 queries per minute in peak conditions. The .web gTLD will use a Whois system design and approach that is comparable to the current implementation. Independent quality control testing ensures Verisign's Whois service is RFC-compliant through all phases of its lifecycle.

Verisign's redundant Whois databases further contribute to overall system availability and reliability. The hardware and software for its Whois service is architected to scale both horizontally (by adding more servers) and vertically (by adding more CPUs and memory to existing servers) to meet future need.

Verisign can fine-tune access to its Whois database on an individual Internet Protocol (IP) address basis, and it works with registrars to help ensure their services are not limited by any restriction placed on Whois. Verisign provides near real-time updates for Whois services for the TLDs under its management. As information is updated in the registration database, it is propagated to the Whois servers for quick publication. These updates align with the near real-time publication of Domain Name System (DNS) information as it is updated in the registration database. This capability is important for the .web gTLD registry as it is Verisign's experience that when DNS data is updated in near real time, so should Whois data be updated to reflect the registration specifics of those domain names.

Verisign's Whois response time has been less than 500 milliseconds for 95 percent of all Whois queries in .com, .net, .tv, and .cc. The response time in these TLDs, combined with Verisign's capacity, enables the Whois system to respond to up to 30,000 searches (or queries) per second for a total capacity of 2.6 billion queries per day.

The Whois software written by Verisign complies with RFC 3912. Verisign uses an advanced in-memory database technology to provide exceptional overall system performance and security. In accordance with RFC 3912, Verisign provides a website at whois.nic. <TLD> that provides free public query-based access to the registration data.

Verisign currently operates both thin and thick Whois systems.

Verisign commits to implementing a RESTful Whois service upon finalization of agreements with the IETF (Internet Engineering Task Force).

Provided Functionalities for User Interface

To use the Whois service via port 43, the user enters the applicable parameter on the command line as illustrated here:

- For domain name: whois EXAMPLE.TLD
- For registrar: whois "registrar Example Registrar, Inc."
- For name server: whois "NS1.EXAMPLE.TLD" or whois "name server (IP address)"

To use the Whois service via the web-based directory service search interface:

- Go to <http://whois.nic.<TLD>>
- Click on the appropriate button (Domain, Registrar, or Name Server)
- Enter the applicable parameter:
 - o Domain name, including the TLD (e.g., EXAMPLE.TLD)
 - o Full name of the registrar, including punctuation (e.g., Example Registrar, Inc.)
 - o Full host name or the IP address (e.g., NS1.EXAMPLE.TLD or

198.41.3.39)

- Click on the Submit button.

Provisions to Ensure That Access Is Limited to Legitimate Authorized Users and Is in Compliance with Applicable Privacy Laws or Policies

To further promote reliable and secure Whois operations, Verisign, Web.com's selected backend registry services provider, has implemented rate-limiting characteristics within the Whois service software. For example, to prevent data mining or other abusive behavior, the service can throttle a specific requestor if the query rate exceeds a configurable threshold. In addition, QoS technology enables rate limiting of queries before they reach the servers, which helps protect against denial of service (DoS) and distributed denial of service (DDoS) attacks.

Verisign's software also permits restrictions on search capabilities. For example, wild card searches can be disabled. If needed, it is possible to temporarily restrict and/or block requests coming from specific IP addresses for a configurable amount of time. Additional features that are configurable in the Whois software include help files, headers and footers for Whois query responses, statistics, and methods to memory map the database. Furthermore, Verisign is European Union (EU) Safe Harbor certified and has worked with European data protection authorities to address applicable privacy laws by developing a tiered Whois access structure that requires users who require access to more extensive data to (i) identify themselves, (ii) confirm that their use is for a specified purpose and (iii) enter into an agreement governing their use of the more extensive Whois data.

1.2 Relevant Network Diagrams

Figure 26-1 provides a summary network diagram of the Whois service provided by Verisign, Web.com's selected backend registry services provider. The figure details the configuration with one resolution/Whois site. For the .web gTLD Verisign provides Whois service from 6 of its 17 primary sites based on the proposed gTLD's traffic volume and patterns. A functionally equivalent resolution architecture configuration exists at each Whois site.

1.3 IT and Infrastructure Resources

Figure 26-2 summarizes the IT and infrastructure resources that Verisign, Web.com's selected backend registry services provider, uses to provision Whois services from Verisign primary resolution sites. As needed, virtual machines are created based on actual and projected demand.

1.4 Description of Interconnectivity with Other Registry Systems

Figure 26-3 provides a technical overview of the registry system provided by Verisign, Web.com's selected backend registry services provider, and shows how the Whois service component fits into this larger system and interconnects with other system components.

1.5 Frequency of Synchronization Between Servers

Synchronization between the SRS and the geographically distributed Whois resolution sites occurs approximately every three minutes. Verisign, Web.com's selected backend registry services provider, uses a two-part Whois update process to ensure Whois data is accurate and available. Every 12 hours an initial file is distributed to each resolution site. This file is a complete copy of all Whois data fields associated with each domain name under management. As interactions with the SRS cause the Whois data to be changed, these incremental changes are distributed to the resolution sites as an incremental file update. This incremental update occurs approximately every three minutes. When the new 12-hour full update is distributed, this file includes all past incremental updates. Verisign's approach to frequency of synchronization between servers meets the Performance Specifications defined in Specification 10 of the Registry Agreement for new gTLDs.

APPROACH AND PLANNED SIZE OF THE REGISTRY

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed and uses proprietary system scaling models to guide the growth of its TLD supporting infrastructure. These models direct Verisign's infrastructure scaling to include, but not be limited to, server capacity, data storage volume, and network throughput that are aligned to projected demand and usage patterns. Verisign periodically updates these models to account for the adoption of more capable and cost-effective technologies.

Verisign's scaling models are proven predictors of needed capacity and related cost. As such, they provide the means to link the projected infrastructure needs of the .web gTLD with necessary implementation and sustainment cost. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its scaling models, Verisign derived the necessary infrastructure required to implement and sustain this gTLD. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

3 TECHNICAL PLAN THAT IS ADEQUATELY RESOURCED IN THE PLANNED COSTS DETAILED IN THE FINANCIAL SECTION

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely adjusts these staffing models to account for new tools and process innovations. These models enable Verisign to continually right-size its staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for this gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability 100 percent of the time for more than 13 years for .com, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's TLD service offerings.

Verisign projects it will use the following personnel roles, which are described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support Whois services:

- Application Engineers: 19
- Database Engineers: 3
- Quality Assurance Engineers: 11

To implement and manage the .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of TLDs. Consistent with its resource modeling, Verisign periodically reviews the level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify

qualified candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its TLDs instead of creating a new entity to manage only the .web gTLD, Verisign realizes significant economies of scale and ensures its TLD best practices are followed consistently. This consistent application of best practices helps ensure the security and stability of both the Internet and the .web gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest TLDs (i.e., .com and .net). Moreover, by augmenting existing teams, Verisign affords new employees the opportunity to be mentored by existing senior staff. This mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

4 COMPLIANCE WITH RELEVANT RFC

Web.com's selected backend registry services provider's (Verisign's) Whois service complies with the data formats defined in Specification 4 of the Registry Agreement. Verisign will provision Whois services for registered domain names and associated data in the top-level domain (TLD). Verisign's Whois services are accessible over Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6), via both Transmission Control Protocol (TCP) port 43 and a web-based directory service at whois.nic.<TLD>, which in accordance with RFC 3912, provides free public query-based access to domain name, registrar, and name server lookups. Verisign's proposed Whois system meets all requirements as defined by ICANN for each registry under Verisign management. Evidence of this successful implementation, and thus compliance with the applicable RFCs, can be verified by a review of the .com and .net Registry Operator's Monthly Reports that Verisign files with ICANN. These reports provide evidence of Verisign's ability to meet registry operation service level agreements (SLAs) comparable to those detailed in Specification 10. The reports are accessible at the following URL:
<http://www.icann.org/en/tlds/monthly-reports/>.

5 COMPLIANCE WITH SPECIFICATIONS 4 AND 10 OF REGISTRY AGREEMENT

In accordance with Specification 4, Verisign, Web.com's selected backend registry services provider, provides a Whois service that is available via both port 43 in accordance with RFC 3912, and a web-based directory service at whois.nic.web also in accordance with RFC 3912, thereby providing free public query-based access. Verisign acknowledges that ICANN reserves the right to specify alternative formats and protocols, and upon such specification, Verisign will implement such alternative specification as soon as reasonably practicable.

The format of the following data fields conforms to the mappings specified in Extensible Provisioning Protocol (EPP) RFCs 5730 - 5734 so the display of this information (or values returned in Whois responses) can be uniformly processed and understood: domain name status, individual and organizational names, address, street, city, state/province, postal code, country, telephone and fax numbers, email addresses, date, and times.

Specifications for data objects, bulk access, and lookups comply with Specification 4 and are detailed in the following subsections, provided in both bulk access and lookup modes.

Bulk Access Mode. This data is provided on a daily schedule to a party designated from time to time in writing by ICANN. The specification of the content and format of this data, and the procedures for providing access, shall be as stated below, until revised in the ICANN Registry Agreement.

The data is provided in three files:

- **Domain Name File:** For each domain name, the file provides the domain name, server name for each name server, registrar ID, and updated date.
- **Name Server File:** For each registered name server, the file provides the server name, each IP address, registrar ID, and updated date.

- Registrar File: For each registrar, the following data elements are provided: registrar ID, registrar address, registrar telephone number, registrar email address, Whois server, referral URL, updated date, and the name, telephone number, and email address of all the registrar's administrative, billing, and technical contacts.

Lookup Mode. Figures 26-4 through Figure 26-6 provide the query and response format for domain name, registrar, and name server data objects.

5.1 Specification 10, RDDS Registry Performance Specifications
The Whois service meets all registration data directory services (RDDS) registry performance specifications detailed in Specification 10, Section 2. Evidence of this performance can be verified by a review of the .com and .net Registry Operator's Monthly Reports that Verisign files monthly with ICANN. These reports are accessible from the ICANN website at the following URL: <http://www.icann.org/en/tlds/monthly-reports/>.

In accordance with RDDS registry performance specifications detailed in Specification 10, Verisign's Whois service meets the following proven performance attributes:

- RDDS availability: <=864 min of downtime (~98%)
- RDDS query RTT: <=2000 ms, for at least 95% of the queries
- RDDS update time: <=60 min, for at least 95% of the probes

6 SEARCHABLE WHOIS

Verisign, Web.com's selected backend registry services provider, provides a searchable Whois service for the .web gTLD. Verisign has experience in providing tiered access to Whois for the .name registry, and uses these methods and control structures to help reduce potential malicious use of the function. The searchable Whois system currently uses Apache's Lucene full text search engine to index relevant Whois content with near-real time incremental updates from the provisioning system.

Features of the Verisign searchable Whois function include:

- Provision of a web-based searchable directory service
- Ability to perform partial match, at least, for the following data fields: domain name, contacts and registrant's name, and contact and registrant's postal address, including all the sub-fields described in EPP (e.g., street, city, state, or province)
- Ability to perform exact match, at least, on the following fields: registrar ID, name server name, and name server's IP address (only applies to IP addresses stored by the registry, i.e., glue records)
- Ability to perform Boolean search supporting, at least, the following logical operators to join a set of search criteria: AND, OR, NOT
- Search results that include domain names that match the selected search criteria

Verisign's implementation of searchable Whois is EU Safe Harbor certified and includes appropriate access control measures that help ensure that only legitimate authorized users can use the service. Furthermore, Verisign's compliance office monitors current ICANN policy and applicable privacy laws or policies to help ensure the solution is maintained within compliance of applicable regulations. Features of these access control measures include:

- All unauthenticated searches are returned as thin results.
- Registry system authentication is used to grant access to appropriate users for thick Whois data search results.
- Account access is granted by the Web.com defined .web gTLD admin user.

Potential Forms of Abuse and Related Risk Mitigation. Leveraging its experience providing tiered access to Whois for the .name registry and

interacting with ICANN, data protection authorities, and applicable industry groups, Verisign, Web.com's selected backend registry services provider, is knowledgeable of the likely data mining forms of abuse associated with a searchable Whois service. Figure 26-7 summarizes these potential forms of abuse and Verisign's approach to mitigate the identified risk.

27. Registration Life Cycle

1 COMPLETE KNOWLEDGE AND UNDERSTANDING OF REGISTRATION LIFECYCLES AND STATES

Please note; all figures, tables and diagrams referenced in the following response can be found in the attachment titled "Attachment dot web Q27." Starting with domain name registration and continuing through domain name delete operations, Web.com Group, Inc.'s ("Web.com") selected backend registry services provider's (Verisign's) registry implements the full registration lifecycle for domain names supporting the operations in the Extensible Provisioning Protocol (EPP) specification. The registration lifecycle of the domain name starts with registration and traverses various states as specified in the following sections. The registry system provides options to update domain names with different server and client status codes that block operations based on the EPP specification. The system also provides different grace periods for different billable operations, where the price of the billable operation is credited back to the registrar if the billable operation is removed within the grace period. Together Figure 27-1 and Figure 27-2 define the registration states comprising the registration lifecycle and explain the trigger points that cause state-to-state transitions. States are represented as green rectangles within Figure 27-1.

1.1 Registration Lifecycle of Create/Update/Delete

The following section details the create/update/delete processes and the related renewal process that Verisign, Web.com's selected backend registry services provider, follows. For each process, this response defines the process function and its characterization, and as appropriate provides a process flow chart.

Create Process. The domain name lifecycle begins with a registration or what is referred to as a Domain Name Create operation in EPP. The system fully supports the EPP Domain Name Mapping as defined by RFC 5731, where the associated objects (e.g., hosts and contacts) are created independent of the domain name.

Process Characterization. The Domain Name Create command is received, validated, run through a set of business rules, persisted to the database, and committed in the database if all business rules pass. The domain name is included with the data flow to the DNS and Whois resolution services. If no name servers are supplied, the domain name is not included with the data flow to the DNS. A successfully created domain name has the created date and expiration date set in the database. Creates are subject to grace periods as described in Section 1.3 of this response, Add Grace Period, Redemption Grace Period, and Notice Periods for Renewals or Transfers.

The Domain Name Create operation is detailed in Figure 27-3 and requires the following attributes:

- A domain name that meets the string restrictions.
- A domain name that does not already exist.
- The registrar is authorized to create a domain name in .web.
- The registrar has available credit.

- A valid Authorization Information (Auth-Info) value.
- Required contacts (e.g., registrant, administrative contact, technical contact, and billing contact) are specified and exist.
- The specified name servers (hosts) exist, and there is a maximum of 13 name servers.
- A period in units of years with a maximum value of 10 (default period is one year).

Renewal Process. The domain name can be renewed unless it has any form of Pending Delete, Pending Transfer, or Renew Prohibited.

A request for renewal that sets the expiry date to more than ten years in the future is denied. The registrar must pass the current expiration date (without the timestamp) to support the idempotent features of EPP, where sending the same command a second time does not cause unexpected side effects.

Automatic renewal occurs when a domain name expires. On the expiration date, the registry extends the registration period one year and debits the registrar account balance. In the case of an auto-renewal of the domain name, a separate Auto-Renew grace period applies. Renewals are subject to grace periods as described in Section 1.3 of this response, Add Grace Period, Redemption Grace Period, and Notice Periods for Renewals or Transfers.

Process Characterization. The Domain Name Renew command is received, validated, authorized, and run through a set of business rules. The data is updated and committed in the database if it passes all business rules. The updated domain name's expiration date is included in the flow to the Whois resolution service.

The Domain Name Renew operation is detailed in Figure 27-4 and requires the following attributes:

- A domain name that exists and is sponsored by the requesting registrar.
- The registrar is authorized to renew a domain name in .web.
- The registrar has available credit.
- The passed current expiration date matches the domain name's expiration date.
- A period in units of years with a maximum value of 10 (default period is one year). A domain name expiry past ten years is not allowed.

Registrar Transfer Procedures. A registrant may transfer his/her domain name from his/her current registrar to another registrar. The database system allows a transfer as long as the transfer is not within the initial 60 days, per industry standard, of the original registration date.

The registrar transfer process goes through many process states, which are described in detail below, unless it has any form of Pending Delete, Pending Transfer, or Transfer Prohibited.

A transfer can only be initiated when the appropriate Auth-Info is supplied. The Auth-Info for transfer is only available to the current registrar. Any other registrar requesting to initiate a transfer on behalf of a registrant must obtain the Auth-Info from the registrant.

The Auth-Info is made available to the registrant upon request. The registrant is the only party other than the current registrar that has access to the Auth-Info. Registrar transfer entails a specified extension of the expiry date for the object. The registrar transfer is a billable operation and is charged identically to a renewal for the same extension of the period. This period can be from one to ten years, in one-year increments.

Because registrar transfer involves an extension of the registration period,

the rules and policies applying to how the resulting expiry date is set after transfer are based on the renewal policies on extension.

Per industry standard, a domain name cannot be transferred to another registrar within the first 60 days after registration. This restriction continues to apply if the domain name is renewed during the first 60 days. Transfer of the domain name changes the sponsoring registrar of the domain name, and also changes the child hosts (ns1.sample.xyz) of the domain name (sample .xyz).

The domain name transfer consists of five separate operations:

- Transfer Request (Figure 27-5): Executed by a non-sponsoring registrar with the valid Auth-Info provided by the registrant. The Transfer Request holds funds of the requesting registrar but does not bill the registrar until the transfer is completed. The sponsoring registrar receives a Transfer Request poll message.
- Transfer Cancel (Figure 27-6): Executed by the requesting registrar to cancel the pending transfer. The held funds of the requesting registrar are reversed. The sponsoring registrar receives a Transfer Cancel poll message.
- Transfer Approve (Figure 27-7): Executed by the sponsoring registrar to approve the Transfer Request. The requesting registrar is billed for the Transfer Request and the sponsoring registrar is credited for an applicable Auto-Renew grace period. The requesting registrar receives a Transfer Approve poll message.
- Transfer Reject (Figure 27-8): Executed by the sponsoring registrar to reject the pending transfer. The held funds of the requesting registrar are reversed. The requesting registrar receives a Transfer Reject poll message.
- Transfer Query (Figure 27-9): Executed by either the requesting registrar or the sponsoring registrar of the last transfer.

The registry auto-approves a transfer if the sponsoring registrar takes no action. The requesting registrar is billed for the Transfer Request and the sponsoring registrar is credited for an applicable Auto-Renew grace period. The requesting registrar and the sponsoring registrar receive a Transfer Auto-Approve poll message.

Delete Process. A registrar may choose to delete the domain name at any time.

Process Characterization. The domain name can be deleted, unless it has any form of Pending Delete, Pending Transfer, or Delete Prohibited.

A domain name is also prohibited from deletion if it has any in-zone child hosts that are name servers for domain names. For example, the domain name "sample.xyz" cannot be deleted if an in-zone host "ns.sample.xyz" exists and is a name server for "sample2.xyz."

If the Domain Name Delete occurs within the Add grace period, the domain name is immediately deleted and the sponsoring registrar is credited for the Domain Name Create. If the Domain Name Delete occurs outside the Add grace period, it follows the Redemption grace period (RGP) lifecycle.

Update Process. The sponsoring registrar can update the following attributes of a domain name:

- Auth-Info
- Name servers
- Contacts (i.e., registrant, administrative contact, technical contact, and billing contact)
- Statuses (e.g., Client Delete Prohibited, Client Hold, Client Renew Prohibited, Client Transfer Prohibited, Client Update Prohibited)

Process Characterization. Updates are allowed provided that the update includes the removal of any Update Prohibited status. The Domain Name Update operation is detailed in Figure 27-10. A domain name can be updated unless it has any form of Pending Delete, Pending Transfer, or Update Prohibited.

1.2 Pending, Locked, Expired, and Transferred

Verisign, Web.com's selected backend registry services provider, handles pending, locked, expired, and transferred domain names as described here. When the domain name is deleted after the five-day Add grace period, it enters into the Pending Delete state. The registrant can return its domain name to active any time within the five-day Pending Delete grace period. After the five-day Pending Delete grace period expires, the domain name enters the Redemption Pending state and then is deleted by the system. The registrant can restore the domain name at any time during the Redemption Pending state.

When a non-sponsoring registrar initiates the domain name transfer request, the domain name enters Pending Transfer state and a notification is mailed to the sponsoring registrar for approvals. If the sponsoring registrar doesn't respond within five days, the Pending Transfer expires and the transfer request is automatically approved.

EPP specifies both client (registrar) and server (registry) status codes that can be used to prevent registry changes that are not intended by the registrant. Currently, many registrars use the client status codes to protect against inadvertent modifications that would affect their customers' high-profile or valuable domain names.

Verisign's registry service supports the following client (registrar) and server (registry) status codes:

- clientHold
- clientRenewProhibited
- clientTransferProhibited
- clientUpdateProhibited
- clientDeleteProhibited
- serverHold
- serverRenewProhibited
- serverTransferProhibited
- serverUpdateProhibited
- serverDeleteProhibited

1.3 Add Grace Period, Redemption Grace Period, and Notice Periods for Renewals or Transfers

Verisign, Web.com's selected backend registry services provider, handles Add grace periods, Redemption grace periods, and notice periods for renewals or transfers as described here.

- Add Grace Period: The Add grace period is a specified number of days following the initial registration of the domain name. The current value of the Add grace period for all registrars is five days.
- Redemption Grace Period: If the domain name is deleted after the five-day grace period expires, it enters the Redemption grace period and then is deleted by the system. The registrant has an option to use the Restore Request command to restore the domain name within the Redemption grace period. In this scenario, the domain name goes to Pending Restore state if there is a Restore Request command within 30 days of the Redemption grace period. From the Pending Restore state, it goes either to the OK state, if there is a Restore Report Submission command within seven days of the Restore Request grace period, or a Redemption Period state if there is no Restore Report Submission command within seven days of the Restore Request grace period.
- Renew Grace Period: The Renew/Extend grace period is a specified

number of days following the renewal/extension of the domain name's registration period. The current value of the Renew/Extend grace period is five days.

- Auto-Renew Grace Period: All auto-renewed domain names have a grace period of 45 days.
- Transfer Grace Period: Domain names have a five-day Transfer grace period.

1.4 Aspects of the Registration Lifecycle Not Covered by Standard EPP RFCs

Web.com's selected backend registry services provider's (Verisign's) registration lifecycle processes and code implementations adhere to the standard EPP RFCs related to the registration lifecycle. By adhering to the RFCs, Verisign's registration lifecycle is complete and addresses each registration-related task comprising the lifecycle. No aspect of Verisign's registration lifecycle is not covered by one of the standard EPP RFCs and thus no additional definitions are provided in this response.

2 CONSISTENCY WITH ANY SPECIFIC COMMITMENTS MADE TO REGISTRANTS AS ADAPTED TO THE OVERALL BUSINESS APPROACH FOR THE PROPOSED gTLD

The registration lifecycle described above applies to the .web gTLD as well as other TLDs managed by Verisign, Web.com's selected backend registry services provider; thus Verisign remains consistent with commitments made to its registrants. No unique or specific registration lifecycle modifications or adaptations are required to support the overall business approach for the .web gTLD.

To accommodate a range of registries, Verisign's registry implementation is capable of offering both a thin and thick Whois implementation, which is also built upon Verisign's award-winning ATLAS infrastructure.

3 COMPLIANCE WITH RELEVANT RFCs

Web.com's selected backend registry services provider's (Verisign's) registration lifecycle complies with applicable RFCs, specifically RFCs 5730 - 5734 and 3915. The system fully supports the EPP Domain Name Mapping as defined by RFC 5731, where the associated objects (e.g., hosts and contacts) are created independent of the domain name.

In addition, in accordance with RFCs 5732 and 5733, the Verisign registration system enforces the following domain name registration constraints:

- Uniqueness/Multiplicity: A second-level domain name is unique in the .web database. Two identical second-level domain names cannot simultaneously exist in .web. Further, a second-level domain name cannot be created if it conflicts with a reserved domain name.
- Point of Contact Associations: The domain name is associated with the following points of contact. Contacts are created and managed independently according to RFC 5733.
 - Registrant
 - Administrative contact
 - Technical contact
 - Billing contact
 - Domain Name Associations: Each domain name is associated with:
 - A maximum of 13 hosts, which are created and managed independently according to RFC 5732
 - An Auth-Info, which is used to authorize certain operations on the object
 - Status(es), which are used to describe the domain name's status in the registry
 - A created date, updated date, and expiry date

4 DEMONSTRATES THAT TECHNICAL RESOURCES REQUIRED TO CARRY THROUGH THE PLANS FOR THIS ELEMENT ARE ALREADY ON HAND OR READILY AVAILABLE

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely adjusts these staffing models to account for new tools and process innovations. These models enable Verisign to continually right-size its staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for the .web gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability 100 percent of the time for more than 13 years for .com, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's TLD service offerings.

Verisign projects it will use the following personnel roles, which are described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support the registration lifecycle:

- Application Engineers: 19
- Customer Support Personnel: 36
- Database Administrators: 8
- Database Engineers: 3
- Quality Assurance Engineers: 11
- SRS System Administrators: 13

To implement and manage the .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of TLDs. Consistent with its resource modeling, Verisign periodically reviews the level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify qualified candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its TLDs instead of creating a new entity to manage only the .web gTLD, Verisign realizes significant economies of scale and ensures its TLD best practices are followed consistently. This consistent application of best practices helps ensure the security and stability of both the Internet and the .web gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest TLDs (i.e., .com and .net). Moreover, by augmenting existing teams, Verisign affords new employees the opportunity to be mentored by existing senior staff. This mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

28. Abuse Prevention and Mitigation

1. COMPREHENSIVE ABUSE POLICIES, WHICH INCLUDE CLEAR DEFINITIONS OF WHAT CONSTITUTES ABUSE IN THE TLD, AND PROCEDURES THAT WILL EFFECTIVELY MINIMIZE

POTENTIAL FOR ABUSE IN THE TLD

Please note; all figures, tables and diagrams referenced in the following response can be found in the attachment titled "Attachment dot web Q28."

Web.com Group, Inc ("Web.com") has been in the business of helping our near 3 million customers establish their online presences for over 15 years. As such, we have a rich history of understanding the importance of abuse prevention and mitigation as a core objective. We are active participants in a variety of industry and government efforts to prevent domain name abuse and are constantly updating our operating procedures to ensure our customers are as protected from this type of activity as they can be.

The .web gTLD will help customers launch and leverage their presence on the World Wide Web. As a leading global provider of online marketing services to small businesses, Web.com recognizes that finding a relevant and memorable domain name can be challenging. Since many keywords and descriptive phrases associated with existing gTLDs have already been registered, it is difficult to pinpoint a domain name which contains a limited number of characters. Consequently, prospective registrants are often unable to secure a unique name. Regularly, in the .com space amongst others, this is because of exploitative or abusive registrations. In the forthcoming .web namespace, we will endeavor to the utmost of our ability to prevent this pattern from repeating.

One of the most important reasons our customers choose Web.com is because of our reputation for great products and exceptional customer service. The .web gTLD is a natural extension of our business. It is a place where we can help customers be successful on the web. At Web.com, we believe that a website is only as good as the services and support behind it. With the .web gTLD, we have the chance to bring this same commitment to service and support to a gTLD. For companies and consumers who stake their reputation on a .web domain name, having a gTLD that is trusted and secure is critical.

Unfortunately, some of the current gTLDs are not operated in a manner that instills this level of confidence. Web.com hopes to make the .web gTLD different. In launching the .web gTLD we have put together a tapestry of efforts that seek to prevent and successfully mitigate domain name abuse, making the web a more accessible and friendly place for small and medium sized businesses as well as consumers. These efforts include:

- An acceptable use policy that clearly defines what is considered abuse and what registrants may and may not do with their domain names
- A seasoned abuse mitigation team that has years of experience in dealing with these issues
- Technological Measures for Removal of Orphan Glue Records
- Efforts and measures to promote accurate and complete Whois
- Requirements for .web accredited registrars to enact measures in support of these efforts

The fight against abusive behavior is not static and Web.com is committed to ensuring that our efforts are constantly evolving to meet the ever changing landscape of threats.

1.1 .web Abuse Prevention and Mitigation Implementation Plan

Preventing domain name abuse in the .web gTLD is of critical importance to registrants, consumers and Web.com. To demonstrate our commitment to make the .web gTLD more resistant to abusive behavior than just about any other gTLD that currently exists, Web.com has explored various mechanisms to help prevent abusive registrations. We were particularly impressed with the set of 31 Proposed Security, Stability and Resiliency Requirements for Financial TLDs that were developed by the Security Standards Working Group (SSWG) under the guidance of the financial services industry. Following their

recommendation that all potential applicants look at these standards for their own TLDs, Web.com has completed a thorough review to determine which might enhance the .web gTLD experience. While not all of the proposed standards are applicable to the .web gTLD, we will endeavor to implement several of them to aid in our efforts to prevent and mitigate abusive registrations.

Web.com has developed and will look to deploy a customized approach that seeks to minimize the potential for abusive registrations and mitigate them as soon as possible should they occur. Registrants, Registrars and the Registry will all play a role in this endeavor. Having all three levels of the .web gTLD ecosystem participate in these measures will help ensure a comprehensive approach to these critical objectives. Web.com has designed the following procedure to prevent and mitigate abusive registrations:

Acceptable Use Policy - Web.com has developed a draft Acceptable Use Policy (AUP) which can be found in "Attachment dot web Q28." This AUP clearly defines what is considered abuse and what type of behavior is expressly prohibited in conjunction with the use of a .web domain name. Web.com will require, through the Registry Registrar Agreement (RRA), that this AUP be included in the registration agreement used by all .web gTLD accredited registrars. This registration agreement must be accepted by a registrant prior to them being able to register a name in the .web gTLD.

Annual Certification of Registrar compliance with Registry-Registrar Agreement. The self-certification program consists, in part, of evaluations applied equally to all operational .web gTLD accredited registrars and conducted from time to time throughout the year. Process steps are as follows:

- Web.com sends an email notification to the ICANN primary registrar contact, requesting that the contact go to a designated URL, log in with his/her Web ID and password, and complete and submit the online form. The contact must submit the form within 15 business days of receipt of the notification.
- When the form is submitted, Web.com sends the registrar an automated email confirming that the form was successfully submitted.
- Web.com reviews the submitted form to ensure the certifications are compliant.
- Web.com sends the registrar an email notification if the registrar is found to be compliant in all areas.
- If a review of the response indicates that the registrar is out of compliance or if Web.com has follow-up questions, the registrar has 10 days to respond to the inquiry.
- If the registrar does not respond within 15 business days of receiving the original notification, or if it does not respond to the request for additional information, Web.com sends the registrar a Breach Notice and gives the registrar 30 days to cure the breach.
- If the registrar does not cure the breach, Web.com terminates the Registry-Registrar Agreement (RRA).

The .web gTLD registry will provide and maintain a primary point of contact for abuse complaints. We will display the contact information for the Abuse Mitigation Team, which serves as the primary point of contact for reporting abuse within the .web gTLD, on the .web gTLD website.

Each .web gTLD accredited registrar will provide and maintain a primary point of contact for abuse complaints. The registrar must provide and maintain valid primary contact information for reporting abuse in the .web gTLD on their website. This will be required as part of the .web gTLD RRA.

Web.com will explicitly define for Registrars what constitutes abusive behavior including but not limited to, malicious, negligent, and reckless behavior. The definition of abusive behavior will be contained in the AUP

that Registrars will be required to include as part of the Registration Agreement. This will be required as part of the .web gTLD RRA.

Registrar must notify Registry Operator immediately regarding any investigation or compliance action including the nature of the investigation or compliance action by ICANN or any outside party (e.g., law enforcement, etc.), along with the TLD impacted. This will be required as part of the .web gTLD RRA.

Development of an Abuse Prevention and Mitigation Working Group. To give the Web.com team alternate perspectives about handling incidents of abuse and ways to mitigate them, we will form an Abuse Prevention and Mitigation Working Group. This team will not only be comprised of a cross functional group of Web.com professionals but also look to involve representatives from law enforcement, our customer base and outside experts. The group would meet regularly to discuss the latest trends in domain name abuse and the most effective way to prevent and remedy them.

1.2 Policies for Handling Complaints Regarding Abuse

Web.com will staff a Single Point of Contact (SPoC) Abuse team to address abuse and malicious use requests. The role of the abuse team is to monitor registry services and review complaints entered online by end users, customers, and/or Law Enforcement. The complaints will be managed in accordance with the applicable Acceptable Use Policy (AUP) and Terms of Service (TOS) which shall allow the Abuse team discretion to suspend a domain instantly or send the complaint through the appropriate escalation channel for complaint resolution.

Complaints shall be received via email at abuse@registry.web as will be prominently provided on the .web website (<http://registry.web>). Registrar access to .web's Abuse Team will be provided via a hotline number, email address and additional personnel for filing direct requests. Complaints may be submitted 24x7 and each request path requires the submitter to provide personal contact information. .web will acknowledge the complaint within one (1) business day and will provide the requestor acceptance and/or resolution within three (3) business days depending on severity and complexity of the complaint.

Web.com views domain name abuse as a serious matter that produces direct harm to Internet users and .web customers. As such, .web will handle each abuse complaint as a direct threat and intends to resolve each validated complaint with a sense of urgency. Our Abuse Policies recognize many forms of abuse related to the registrations and use of domain names. Abuses and their respective mitigation strategy listed here is not an exhaustive list, but is meant to highlight general process and procedure by which .web will manage the most common forms of abuse. The .web Abuse Team collaborates and participates with industry experts and forums to understand the latest forms of abuse in an attempt to protect customers of our services and Internet users where possible.

DRAFT ABUSE REMEDY PROCESS

Listed here is the proposed process for dealing with the major forms of domain abuse:

1. Customer or end user submits abuse complaint to abuse@registry.web;
2. Abuse Coordinator receives request and acknowledges receipt of complaint;
3. Abuse Coordinator analyzes request to determine the abuse type to be addressed and references the .web knowledgebase for detailed procedures;
4. Abuse Coordinator assigns a severity rating based on complaint type;
5. Abuse Coordinator resolves the complaint based on the following decision tree:

- a. Is the request a court ordered seizure and transfer?
 - i. Yes - See section 28.1.1
 - ii. No - next step
- b. Does the request reflect a potential DDOS Attack?
 - i. Yes - See section 28.1.2
 - ii. No - next step
- c. Is the request a phishing complaint?
 - i. Yes - See section 28.1.3
 - ii. No - next step
- d. Is the complaint a notice of a trademark infringement?
 - i. Yes - See section 28.1.4
 - ii. No - next step
- e. Is the request a possible hijacking case or a transfer dispute?
 - i. Yes - See section 28.1.5
 - ii. No - next step
- f. Is the request an email service abuse?
 - i. Yes - See section 28.1.6
 - ii. No - next step
- g. Does the complaint refer to abusive or offensive content hosted on a .web domain?
 - i. Yes - See section 28.1.7
 - ii. No - next step
- h. For all other abuses not defined:
 - i. Escalate request to Abuse Manager for guidance and resolution

28.1.1 Court Ordered Seizure and Transfer

Definition: Law enforcement via a court of legal jurisdiction orders that domain be seized due to illegal activity of applicable law.

Service Level: One (1) business day

Procedure:

- Abuse Coordinator contacts the legal jurisdiction to request signed copies of the court order;
- Upon receipt of court order, Abuse Coordinator confirms request with the Abuse Situation Manager;
- If the request is determined to be valid, Abuse Coordinator will submit a request to the Registry Support team to have the domain pushed to the requested registrar as directed by the applicable judicial entity;
- If the request is determined to be invalid or documents submitted are in question, the Abuse Coordinator will contact the legal jurisdiction requesting the appropriate documentation or to provide reasoning as to why the request cannot be fulfilled.

28.1.2 DOS or DDOS Attack

Definition: A denial-of-service attack (DoS attack) or distributed denial-of-service attack (DDoS attack) is an attempt to make a computer or network resource unavailable to its intended users.

Service Level: One (1) business day

Procedure:

- Abuse Coordinator will confirm the DDOS attack with the Abuse Manager;
- If the complaint is confirmed as a DDOS attack:
 - o Abuse Coordinator will escalate the request to the respective Registrar Support Team;
 - o If not, Abuse Coordinator will respond to the complainant as unable to confirm and request additional information or close the complaint;
- Registrar Support team will suspend the domain registration until further notice.

28.1.3 Phishing

Definition: Phishing is a website fraudulently presenting itself as a trusted site (often a bank) in order to deceive Internet users into divulging sensitive information (e.g. online banking credentials, email passwords).

Service Level: One (1) business day

Procedure:

- Abuse Coordinator will confirm the phishing scam with the Abuse Manager;
- If the complaint is confirmed as a legitimate phishing event;
 - o Abuse Coordinator will escalate the request to the Registry Support Team;
 - o If not , Abuse Coordinator will respond to the complainant as unable to confirm and request additional information or close the complaint;
- Registry Support Team will immediately suspend the domain;
- Abuse Manager will investigate the Phish event and determine the intent of the domain registrant, the Registry Support team seize and/or delete the domain from the zone.

28.1.4 Cybersquatting / Trademark Infringement

Definition: Cybersquatting is the deliberate and bad-faith registration and use of a name that is a registered brand or mark of an unrelated entity, often for the purpose of profiting (typically, though not exclusively, through pay-per-click advertisements).

Service Level: Three (3) business days

Procedure:

- If request appears to be an initial complaint on a possible infringement, Abuse Coordinator will direct complainant to the UDRP/WIPO process;
- If not , if the request of transfer is from a .web registrar, Abuse Coordinator will work with the Registrar to ensure the domain in question is transferred appropriately.

28.1.5 Transfer Disputes / Hijacking

Definition: Domain hijacking or domain theft is the act of changing the registration of a domain name without the permission of its original registrant.

Service Level: Three (3) business days

Procedure:

- Abuse Coordinator will confirm the OFAC request with the Abuse Manager;
- Abuse Coordinator will escalate request to and Registrar shall internal policies and procedures to investigate the transfer.

28.1.6 Email Service Abuse

Definition: An illegitimate use of email systems to distribute abusive content or in a manner that violates the Acceptable Use Policy. Examples of this abuse are Un-Solicited Commercial Email (UCE/SPAM).

Service Level: Three (3) business days

Procedure:

- Abuse Coordinator will validate the complaint for UCE/SPAM elements

and collaborate with the Complainant to acquire the examples of the offensive material;

- If Abuse Coordinator deems the offensive material to violate Acceptable Use Policy and is deemed to be offensive material, Abuse Coordinator will escalate the request to the Registry Support team for suspension;
- Registry Support team will immediately suspend the domain;
- If a .web customer is found to be unknowingly sending UCE, Customer shall be allotted the opportunity to correct the situation and assurances must be received by offender to ensure against future occurrences.

28.1.7 Web Hosting Abuse

Definition: Content or material hosted on a website that that is deemed to be offensive or against the .web Acceptable Use Policy. Material that is deemed offensive by registrar/host shall result in a Warning, then Suspension if material is not removed and possible seizure or termination of services.

Service Level: Three (3) business days

Procedure:

- Abuse Coordinator will validate the information in the complaint to confirm that the hosting package is being used in a way that is not compliant with the .web Acceptable Use Policy. Some examples may include the following:
 - o Documents, videos, pictures, music files, software etc. is not associated with the function or serving up of website;
 - o Content being stored is not accessible from the Website;
 - o An open FTP server;
 - o Storage being used as a hard drive/backup; or
 - o Space Manager usage exceeds 2GB of storage on the UNIX hosting platform only.
- If one or more of the above is confirmed and validated, the Abuse Coordinator or Technical Services will notify the Customer that they are in violation of the .web AUP and/or Terms of Service;
- An email will be sent immediately to the Registrant, Admin and Technical contact on file to advise of the violation. The email should instruct the Customer to take the appropriate action within 24 hours to remove the offending content or they may be subjected to a suspension of services;
- During Business Hours, the Abuse Coordinator will contact the Customer via phone in addition to sending the email to inform the Registrant, Admin or Technical contacts of the offending violation. The Technical Services agents will follow the same process for After Hours handling;
- If no response is received within 24 hours, a second phone and email attempt will be made to reach the Registrant, Admin and Technical contact;
- If the offending party does not respond by the end of the second business day, action will be taken to remove the offending content that is causing server degradation;
- Technical Support team will suspend the Hosting services;
- The Registry Support team will place the domain on Registrar hold to de-resolve the name;
- If the offending party responds and agrees to remove the offending content within the 24 hour time frame, the Abuse Coordinator or Technical Services agent must confirm the material has been removed, and note the appropriate remediation within the CRM system;
- If the offending party responds and agrees to remove the offending content after the service suspension, the Registry Support team may remove the suspension and allow customer to remove the content. Support will confirm the offending material has been removed, and note the appropriate CRM systems;
- If the offending party requests that .web remove the offending material, the Abuse Coordinator agent must call the Customer and obtain confirmation to remove the content on behalf of the Customer. The Abuse

Coordinator will also obtain written confirmation from the Customer via the Registrant, Administrative or Technical Contacts that are listed. The confirmation should be noted in the appropriate CRM system;

- If there is no response from the offending party after 7 Days, the Abuse Coordinator will submit a request to delete the offending content from the servers to the Abuse Manager for approval to delete the content;
- Prior to deleting the content, an email will be sent to the appropriate internal Legal point of contact to advise of the issue and obtain approval to delete the content.

1.3 Proposed Measures for Removal of Orphan Glue Records

Although orphan glue records often support correct and ordinary operation of the Domain Name System (DNS), registry operators will be required to remove orphan glue records (as defined at <http://www.icann.org/en/committees/security/sac048.pdf>) when provided with evidence in written form that such records are present in connection with malicious conduct. Web.com's selected backend registry services provider's registration system is specifically designed to not allow orphan glue records. Registrars are required to delete/move all dependent DNS records before they are allowed to delete the parent domain.

To prevent orphan glue records, Verisign, Web.com's chosen backend registry services provider, performs the following checks before removing a domain or name server:

Checks during domain delete:

- Parent domain delete is not allowed if any other domain in the zone refers to the child name server.
- If the parent domain is the only domain using the child name server, then both the domain and the glue record are removed from the zone.

Check during explicit name server delete:

- Verisign confirms that the current name server is not referenced by any domain name (in-zone) before deleting the name server.

Zone-file impact:

- If the parent domain references the child name server AND if other domains in the zone also reference it AND if the parent domain name is assigned a serverHold status, then the parent domain goes out of the zone but the name server glue record does not.
- If no domains reference a name server, then the zone file removes the glue record.

1.4 Resourcing Plans

Details related to resourcing plans for the initial implementation and ongoing maintenance of Web.com's abuse plan are provided in Section 2 of this response.

1.5 Measures to Promote Whois Accuracy

Web.com supports efforts to improve the accuracy and completeness of Whois records. To that end, we will seek to implement a series of measures that require registrars and registrants to help us in this pursuit. This includes a Whois reminder process at the registry level, regular scans of the Whois data to search for blank or incomplete data and economic incentives for registrars who achieve 100% complete and accurate Whois data for those names they have registered.

Regular Monitoring of Registration Data for Accuracy and Completeness

Whois data reminder process. Verisign regularly reminds registrars of their obligation to comply with ICANN's Whois Data Reminder Policy, which was

adopted by ICANN as a consensus policy on 27 March 2003 (<http://www.icann.org/en/registrars/wdrp.htm>). Verisign sends a notice to all registrars once a year reminding them of their obligation to be diligent in validating the Whois information provided during the registration process, to investigate claims of fraudulent Whois information, and to cancel domain name registrations for which Whois information is determined to be invalid.

Bi-Annual Whois Verification by Registrars. As will be required in the Registry-Registrar Agreement, all .web accredited registrars will be required to verify Whois data for each record they have registered in the TLD twice a year. Verification can take place via email, phone or any other methods as long as there is a proactive action by the registrant to confirm the accuracy of the Whois data associated with the domain name. Web.com will randomly audit Whois records to ensure compliance and accuracy. As part of the .web gTLD Abuse reporting system, users can report missing or incomplete Whois data via the registry website.

Quarterly Scan of the Zone file for incomplete Registrant Data. On a quarterly basis, Web.com will do a scan of all Whois records in the .web gTLD to find any blank fields or missing registration data. Upon completion of the scan, registrars will be sent a report detailing which domain names are missing data. As part of their responsibilities in the RAA to work towards 100% accuracy of Whois data, registrars must then alert registrants that there is data missing in their Whois record and remind them of their responsibility contained in the registration agreement that they must comply with ICANN requirements for complete and accurate Whois data.

Economic incentives for Registrars to achieve 100% Whois Accuracy

Web.com will offer Market Development Funds (MDF) to those registrars who can demonstrate via a third party audit that the .web gTLD names registered with them have 100% complete and accurate Whois data.

1.6 Malicious or Abusive Behavior Definitions, Metrics, and Service Level Requirements for Resolution

Web.com defines Malicious and Abusive behavior based on the following but not limited definitions:

Phishing is a criminal activity employing tactics to defraud and defame Internet users via sensitive information with the intent to steal or expose credentials, money or identities. A phishing attack begins with a spoofed email posing as a trustworthy electronic correspondence that contains hijacked brand names i.e. (financial institutions, credit card companies, e-commerce sites). The language of a phishing email is misleading and persuasive by generating either fear and/or excitement to ultimately lure the recipient to a fraudulent website. It is paramount for both the phishing email and website to appear credible in order for the attack to influence the recipient. As with the spoofed email, phishers aim to make the associated phishing website appear credible. The legitimate target website is mirrored to make the fraudulent site look professionally designed. Fake third-party security endorsements, spoofed address bars, and spoofed padlock icons falsely lend credibility to fraudulent sites as well. The persuasive inflammatory language of the email combined with a legitimate looking website is used to convince recipients to disclose sensitive information such as passwords, usernames, credit card numbers, social security numbers, account numbers, and mother's maiden name.

Malware is malicious software that was intentionally developed to infiltrate or damage a computer, mobile device, software and/or operating infrastructure or website without the consent of the owner or authorized party. This includes, amongst others, Viruses, Trojan horses, and worms.

Domain Name or Domain Theft is the act of changing the registration of a

domain name without the permission of its original registrant. Section 1.2 outlines the Web.com Policies and Procedures for Handling Complaints Regarding Abuse as defined above.

As pertains to Web.com performance metrics and service level requirements for resolution, we adhere to a 12 hour timeframe to address and potentially rectify the issue as it pertains to all forms of abuse and fraud. Once a notification is received via email, call center or fax, the Web.com Customer Service centers immediately create a support ticket in order to monitor and track the issue through resolution. If notifications are received during normal business hours (8am - 11pm EST. (Monday - Friday) and 8am - 6pm EST (Saturday & Sunday) the majority of issues are resolved in less than a 4 hour period.

1.7 Controls to Ensure Proper Access to Domain Functions

To ensure proper access to domain functions, Web.com incorporates Verisign's Registry-Registrar Two-Factor Authentication Service into its full-service registry operations. The service is designed to improve domain name security and assist registrars in protecting the accounts they manage by providing another level of assurance that only authorized personnel can communicate with the registry. As part of the service, dynamic one-time passwords (OTPs) augment the user names and passwords currently used to process update, transfer, and/or deletion requests. These one-time passwords enable transaction processing to be based on requests that are validated both by "what users know" (i.e., their user name and password) and "what users have" (i.e., a two-factor authentication credential with a one-time-password).

Registrars can use the one-time-password when communicating directly with Verisign's Customer Service department as well as when using the registrar portal to make manual updates, transfers, and/or deletion transactions. The Two-Factor Authentication Service is an optional service offered to registrars that execute the Registry-Registrar Two-Factor Authentication Service Agreement. As shown in Figure 28-1, the registrars' authorized contacts use the OTP to enable strong authentication when they contact the registry. There is no charge for the Registry-Registrar Two-Factor Authentication Service. It is only enabled for registrars that wish to take advantage of the added security provided by the service.

2. TECHNICAL PLAN THAT IS ADEQUATELY RESOURCED IN THE PLANNED COSTS DETAILED IN THE FINANCIAL SECTION

Resource Planning

Web.com is a leading provider of Internet services for small to medium-sized businesses (SMBs). Web.com is the parent company of two global domain name registrars and further meets the Internet needs of SMBs throughout their lifecycle with affordable value added services that including domain name registration, website design, search engine optimization, search engine marketing, social media and mobile products, local sales leads, eCommerce solutions and call center services. Headquartered in Jacksonville, FL, USA, Web.com is NASDAQ traded company serving nearly three million customers with more than 1,700 global employees in fourteen locations in North America, South America and the United Kingdom.

Our business is helping people establish, maintain, promote, and optimize their web presence. Web.com intentionally chose Verisign as our registry services provider because of their unsurpassed track record in operating some of the world's most complex and critical top level domains. Verisign's support for the .web gTLD will help ensure its success

The .web gTLD will be fully supported by a cross function team of Web.com

professionals. Numbers and types of employees will vary for each function but Web.com projects it will use the following personnel to support the resource planning requirements:

- Quality Assurance Engineer: 0.5 FTE
- System Administrator: 1 FTE
- Database Administrator: 0.5 FTE
- Technical Project Manager: 0.5 FTE
- Marketing Director: 1 FTE
- Sales Manager: 1 FTE
- Legal Counsel: 1 FTE
- Finance/Accounting: 1 FTE
- Customer Service: 2 FTEs

Resource Planning Specific to Backend Registry Activities

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely adjusts these staffing models to account for new tools and process innovations. These models enable Verisign to continually right-size its staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for this gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability 100 percent of the time for more than 13 years for .com, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's TLD service offerings.

Verisign projects it will use the following personnel roles, which are described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support abuse prevention and mitigation:

- Application Engineers: 19
- Business Continuity Personnel: 3
- Customer Affairs Organization: 9
- Customer Support Personnel: 36
- Information Security Engineers: 11
- Network Administrators: 11
- Network Architects: 4
- Network Operations Center (NOC) Engineers: 33
- Project Managers: 25
- Quality Assurance Engineers: 11
- Systems Architects: 9

To implement and manage the Web.com .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of TLDs. Consistent with its resource modeling, Verisign periodically reviews the level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify

qualified candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its TLDs instead of creating a new entity to manage only this proposed gTLD, Verisign realizes significant economies of scale and ensures its TLD best practices are followed consistently. This consistent application of best practices helps ensure the security and stability of both the Internet and this proposed gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest TLDs (i.e., .com and .net). Moreover, by augmenting existing teams, Verisign affords new employees the opportunity to be mentored by existing senior staff. This mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

3. POLICIES AND PROCEDURES IDENTIFY AND ADDRESS THE ABUSIVE USE OF REGISTERED NAMES AT STARTUP AND ON AN ONGOING BASIS

3.1 Start-Up Anti-Abuse Policies and Procedures

Verisign, Web.com's selected backend registry services provider, provides the following domain name abuse prevention services, which Web.com incorporates into its full-service registry operations. These services are available at the time of domain name registration.

Registry Lock. The Registry Lock Service allows registrars to offer server-level protection for their registrants' domain names. A registry lock can be applied during the initial standup of the domain name or at any time that the registry is operational.

Specific Extensible Provisioning Protocol (EPP) status codes are set on the domain name to prevent malicious or inadvertent modifications, deletions, and transfers. Typically, these 'server' level status codes can only be updated by the registry. The registrar only has 'client' level codes and cannot alter 'server' level status codes. The registrant must provide a pass phrase to the registry before any updates are made to the domain name. However, with Registry Lock, provided via Verisign, Web.com's subcontractor, registrars can also take advantage of server status codes.

The following EPP server status codes are applicable for domain names: (i) serverUpdateProhibited, (ii) serverDeleteProhibited, and (iii) serverTransferProhibited. These statuses may be applied individually or in combination.

The EPP also enables setting host (i.e., name server) status codes to prevent deleting or renaming a host or modifying its IP addresses. Setting host status codes at the registry reduces the risk of inadvertent disruption of DNS resolution for domain names.

The Registry Lock Service is used in conjunction with a registrar's proprietary security measures to bring a greater level of security to registrants' domain names and help mitigate potential for unintended deletions, transfers, and/or updates.

Two components comprise the Registry Lock Service:

- Web.com and/or its registrars provides Verisign, the provider of backend registry services, with a list of the domain names to be placed on the server status codes. During the term of the service agreement, the registrar can add domain names to be placed on the server status codes and/or remove domain names currently placed on the server status codes. Verisign then manually authenticates that the registrar submitting the list of domain names is the registrar of record for such domain names.
- If Web.com and/or its registrars requires changes (including updates, deletes, and transfers) to a domain name placed on a server status code, Verisign follows a secure, authenticated process to perform the change.

This process includes a request from a Web.com-authorized representative for Verisign to remove the specific registry status code, validation of the authorized individual by Verisign, removal of the specified server status code, registrar completion of the desired change, and a request from the Web.com-authorized individual to reinstate the server status code on the domain name. This process is designed to complement automated transaction processing through the Shared Registration System (SRS) by using independent authentication by trusted registry experts.

Web.com intends to charge registrars based on the market value of the Registry Lock Service. A tiered pricing model is expected, with each tier having an annual fee based on per domain name/host and the number of domain names and hosts to be placed on Registry Lock server status code(s).

3.2 Ongoing Anti-Abuse Policies and Procedures

3.2.1 Policies and Procedures That Identify Malicious or Abusive Behavior

Verisign, Web.com's selected backend registry services provider, provides the following service to Web.com for incorporation into its full-service registry operations.

Malware scanning service. Registrants are often unknowing victims of malware exploits. Verisign has developed proprietary code to help identify malware in the zones it manages, which in turn helps registrars by identifying malicious code hidden in their domain names.

Verisign's malware scanning service helps prevent websites from infecting other websites by scanning web pages for embedded malicious content that will infect visitors' websites. Verisign's malware scanning technology uses a combination of in-depth malware behavioral analysis, anti-virus results, detailed malware patterns, and network analysis to discover known exploits for the particular scanned zone. If malware is detected, the service sends the registrar a report that contains the number of malicious domains found and details about malicious content within its TLD zones. Reports with remediation instructions are provided to help registrars and registrants eliminate the identified malware from the registrant's website.

3.2.2 Policies and Procedures That Address the Abusive Use of Registered Names

Suspension processes.

In the case of domain name abuse, Web.com will determine whether to take down the subject domain name. Verisign, Web.com's selected backend registry services provider, will follow the following auditable processes to comply with the suspension request.

Verisign Suspension Notification. Web.com submits the suspension request to Verisign for processing, documented by:

- Threat domain name
- Registry incident number
- Incident narrative, threat analytics, screen shots to depict abuse, and/or other evidence
- Threat classification
- Threat urgency description
- Recommended timeframe for suspension/takedown
- Technical details (e.g., Whois records, IP addresses, hash values, anti-virus detection results/nomenclature, name servers, domain name statuses that are relevant to the suspension)
- Incident response, including surge capacity

Verisign Notification Verification. When Verisign receives a suspension request from Web.com, it performs the following verification procedures:

- Validate that all the required data appears in the notification.
- Validate that the request for suspension is for a registered domain name.
- Return a case number for tracking purposes.

Suspension Rejection. If required data is missing from the suspension request, or the domain name is not registered, the request will be rejected and returned to Web.com with the following information:

- Threat domain name
- Registry incident number
- Verisign case number
- Error reason

Registrar Notification. Once Verisign has performed the domain name suspension, and upon Web.com request, Verisign notifies the registrar of the suspension. Registrar notification includes the following information:

- Threat domain name
- Registry incident number
- Verisign case number
- Classification of type of domain name abuse
- Evidence of abuse
- Anti-abuse contact name and number
- Suspension status
- Date/time of domain name suspension

Registrant Notification. Once Verisign has performed the domain name suspension, and upon Web.com request, Verisign notifies the registrant of the suspension. Registrant notification includes the following information:

- Threat domain name
- Registry incident number
- Verisign case number
- Classification of type of domain name abuse
- Evidence of abuse
- Registrar anti-abuse contact name and number

Upon Web.com request, Verisign can provide a process for registrants to protest the suspension.

Domain Suspension. Verisign places the domain to be suspended on the following statuses:

- serverUpdateProhibited
- serverDeleteProhibited
- serverTransferProhibited
- serverHold

Suspension Acknowledgement. Verisign notifies Web.com that the suspension has been completed. Acknowledgement of the suspension includes the following information:

- Threat domain name
- Registry incident number
- Verisign case number
- Case number
- Domain name
- Web.com abuse contact name and number, or registrar abuse contact name and number
- Suspension status

4. WHEN EXECUTED IN ACCORDANCE WITH THE REGISTRY AGREEMENT, PLANS WILL RESULT IN COMPLIANCE WITH CONTRACTUAL REQUIREMENTS

Web.com is fully committed to improving the completeness and accuracy of Whois data and to preventing and mitigating domain name abuse in the .web gTLD. We strongly believe the efforts that we have outlined will go a long way in this critical area and most certainly meet the requirements as outlined by ICANN.

The fight against domain names abuse is not a static fight. The tactics used by malicious parties are constantly evolving and web.com is committed to evolving our systems to address these ongoing threats not because ICANN says we have to but simply because it is what our customers have come to expect from Web.com.

The .web gTLD is an extension of our current business. At Web.com, we believe that a website is only as good as the services and support behind it. With the .web gTLD, we have the chance to bring this same commitment to service and support to a gTLD. For companies and consumers who stake their reputation on a .web domain name, having a gTLD that is trusted and secure is critical.

5. TECHNICAL PLAN SCOPE/SCALE THAT IS CONSISTENT WITH THE OVERALL BUSINESS APPROACH AND PLANNED SIZE OF THE REGISTRY

Scope/Scale Consistency

As one of the first domain registrars, Web.com and its subsidiaries have seen the Internet grow exponentially across three decades. Web.com has grown to a point where it now serves approximately 3 million customers, comprising over 8 million domain names under management. As our customer base grew and the number of domains we managed with it, we expanded our operations to meet customer needs. We anticipate doing exactly the same as .web proliferates. Our systems are highly developed and continually tested and audited, and will scale as we scale. The commitments we will seek to make to prevent domain name abuse will expand to meet the anticipated growth of the .web gTLD. We invest tens of millions each year in upgrading infrastructure and developing new business processes to meet the growth and needs of our customer base, and consider doing so of paramount importance.

After 15 years of developing in this way, Web.com is a leading provider of Internet services for small- to medium-sized businesses (SMBs). Web.com is the parent company of two global domain name registrars, and further meets the Internet needs of consumers and businesses throughout their lifecycle with affordable value-added services. Those services include domain name registration; website design; search engine optimization; search engine marketing; social media and mobile products; local sales leads; eCommerce solutions; and call center services.

Headquartered in Jacksonville, FL, USA, Web.com is a publicly traded company (Nasdaq: WWWW), with more than 1,700 global employees in fourteen locations in North America, South America and the United Kingdom. Web.com brings a wealth of experience in providing a seamless process for customers from the first point of registration through the growth of their Internet properties.

Indeed, following our acquisition of Register.com in July 2010 and the subsequent acquisition of Network Solutions, LLC, in October 2011, we have become one of the largest domain name registrars in the world. Web.com offers a variety of gTLDs and a full suite of domain name services, including registration, management, renewal, expiration protection and privacy services.

It is clear, therefore, that managing the potentially enormous growth of the .web namespace will be a challenge, but a challenge to which we are more than equal.

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed and uses proprietary system scaling models to guide the growth of its TLD supporting infrastructure. These models direct Verisign's infrastructure scaling to include, but not be limited to, server capacity, data storage volume, and network throughput that are aligned to projected demand and usage patterns. Verisign periodically updates these models to account for the adoption of more capable and cost-effective technologies.

Verisign's scaling models are proven predictors of needed capacity and related cost. As such, they provide the means to link the projected infrastructure needs of the .web gTLD with necessary implementation and sustainment cost. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its scaling models, Verisign derived the necessary infrastructure required to implement and sustain this gTLD. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Other Operating Cost" (Template 1, Line I.L) within the Question 46 financial projections response.

29. Rights Protection Mechanisms

1 MECHANISMS DESIGNED TO PREVENT ABUSIVE REGISTRATIONS

Web.com Group, Inc ("Web.com") has been in the business of helping our nearly 3 million customers establish their online presence for over 15 years. Through our recent acquisition of Network Solutions, the oldest ICANN accredited registrar, with over 25 years of experience, we have a long history of understanding the importance of rights protection. This is a core objective not only from our own personal perspective as the holder of various trademarks including web.com®, but also on behalf of our customers who have their own trademarks.

Web.com will implement and adhere to any rights protection mechanisms (RPMs) that may be mandated by ICANN, including each mandatory RPM set forth in the Registry Agreement, specifically Specification 7. Web.com acknowledges that, at a minimum, ICANN requires a Sunrise period, a Trademark Claims period, and interaction with the Trademark Clearinghouse with respect to the registration of domain names for the .web gTLD. It should be noted that because ICANN, as of the time of this application submission, has not issued final guidance with respect to the Trademark Clearinghouse, Web.com cannot fully detail the specific implementation of the Trademark Clearinghouse within this application. Web.com will adhere to all processes and procedures to comply with ICANN guidance once this guidance is finalized.

We understand the importance of Trademark holders to manage and protect their brands. In order to demonstrate our commitment to ensure the .web gTLD will accommodate the Intellectual Property community, Web.com has analyzed various additional mechanisms to help prevent abusive registrations. We were particularly impressed with the set of 31 Proposed Security, Stability and Resiliency Requirements for Financial gTLDs that were developed by the Security Standards Working Group (SSWG) under the guidance of the financial services industry. Following their recommendation that all potential applicants look at these standards for their own gTLDs, Web.com completed a thorough review to determine which standards may enhance the .web gTLD experience. While not all of the proposed standards are applicable to the .web gTLD, we will strive to implement several of these standards to ensure trademark owners will be able to take advantage of the additional

protection beyond the minimums set forth by ICANN.

Web.com has developed and will deploy a customized approach that seeks to minimize the potential for abusive registrations and incorporate a proactive mitigation process if a situation were to arise. Registrants, Registrars and the Registry will be contributing participants in this endeavor. Having all three participating entities of the .web gTLD ecosystem take part in these measures will ensure a comprehensive approach to these critical objectives. Web.com has designed the following procedures to help protect the rights of trademark owners:

- Extended Sunrise Services
- Extended Trademark Claims Service
- Name Selection Policy
- Acceptable Use Policy
- Name Allocation Policy
- URS and UDRP
- PDDRP and RRDRP
- Rapid Takedown or Suspension
- Anti-Abuse Process
- Malware Code Identification
- DNSSEC Signing Service
- Biannual WHOIS Verification
- Participation in Anti-abuse Community Activities

As described in this response, Web.com will implement a Sunrise period and Trademark Claims service with respect to the registration of domain names within the .web gTLD. Certain aspects of the Sunrise period and/or Trademark Claims service may be administered on behalf of Web.com by Web.com approved registrars or by authorized subcontractors of Web.com, such as its selected backend registry services provider, Verisign.

Sunrise Periods. As it pertains to the launch of the .web gTLD, Web.com is currently planning on holding two different sunrise periods. Sunrise A will enable those participants that wish to register trademarks in the .web gTLD. A second sunrise period, Sunrise B, will be held for those who wish to reserve a domain name already registered in another gTLD. A more detailed explanation of each Sunrise Period follows.

Sunrise A

As set forth in the ICANN Applicant Guidebook, the Sunrise service pre-registration procedure for domain names must last for at least 30 days prior to the launch of the general registration of domain names in the gTLD.

To ensure that trademark owners have ample time to participate in the midst of the possible launch of several other gTLDs, Web.com is planning on extending the sunrise to 60 days, 30 days longer than the ICANN mandated minimum.

During the Sunrise period, holders of marks that have been previously validated by the Trademark Clearinghouse receive notice of domain names that are an identical match (as defined in the ICANN Applicant Guidebook) to their mark(s). Such notice is in accordance with ICANN's requirements and is provided by Web.com either directly or through Web.com-approved registrars.

Web.com requires all registrants, either directly or through Web.com-approved registrars, who are in good-standing with ICANN, to i) affirm that said registrants meet the Sunrise Eligibility Requirements (SER) and ii) submit to the Sunrise Dispute Resolution Policy (SDRP) consistent with Section 6 of the Trademark Clearinghouse model. At a minimum Web.com recognizes and honors all word marks for which a proof of use was submitted and validated by the Trademark Clearinghouse.

During the Sunrise period, Web.com and/or Web.com-approved registrars, as applicable, are responsible for determining whether each domain name is eligible to be registered (including in accordance with the SERs).

Sunrise B

During a potential Sunrise B, registrants of domain names in other gTLDs may be able to file an application through a .web gTLD accredited registrar to register their existing domain name in the .web gTLD. Proof of registration of the domain name will be verified at the time of application. This sunrise period will last 30 days and at the end of the registration period, if there are no identical matches to any other applied for strings, the domain name will be registered to the appropriate applicant. If there are competing applications for the same domain name, qualified applicants will proceed to a closed auction to resolve the conflict.

Trademark Claims Service. As provided by the Trademark Clearinghouse model set forth in the January 11, 2012 version of the ICANN Applicant Guidebook, all new gTLDs will be required to provide a Trademark Claims service for a minimum of 60 days after the launch of the general registration of domain names in the gTLD (Trademark Claims period).

Similar to our voluntarily extending the sunrise period to accommodate the needs of trademark owners, Web.com is planning on extending the trademark claims services to 120 days, double the ICANN mandated minimum. As the processes for how the trademark clearinghouse, including technical and financial specifics of how the program will work, are not finalized as of the filing of this application, Web.com reserves the right to revisit the length of the Trademark Claims Service.

During the Trademark Claims period, in accordance with ICANN's requirements, Web.com or the Web.com-approved registrar will send a Trademark Claims Notice to any prospective registrant of a domain name that is an identical match (as defined in the ICANN Applicant Guidebook) to any mark that is validated in the Trademark Clearinghouse. The Trademark Claims Notice will include links to the Trademark Claims as listed in the Trademark Clearinghouse and will be provided at no cost.

Prior to registration of said domain name, Web.com or the Web.com-approved registrar will require each prospective registrant to provide the warranties dictated in the Trademark Clearinghouse model set forth in the ICANN Applicant Guidebook. Those warranties will include receipt and understanding of the Trademark Claims Notice and confirmation that registration and use of said domain name will not infringe on the trademark rights of the mark holders listed. Without receipt of said warranties, Web.com or the Web.com-approved registrar will not have the ability to process the domain name registration.

Following the registration of a domain name, the Web.com-approved registrar will provide a notice of domain name registration to the holders of marks that have been previously validated by the Trademark Clearinghouse and are an identical match. This notice will be as dictated by ICANN. At a minimum Web.com will recognize, honor and adhere to all word marks validated by the Trademark Clearinghouse.

Adoption of Certain SSWG Elevated Security Standards

As referenced earlier in this question, Web.com will work to implement the following elevated security standards in the .web gTLD:

Name Selection Policy

The .web gTLD will enforce a name selection policy that ensures that all names registered in the gTLD will be in compliance with ICANN mandated

technical standards. These include restrictions on 2 character names, tagged names, and reserved names for Registry Operations. All names must also be in compliance with all applicable RFCs governing the composition of domain names. In addition, registrations of Country, Geographical and Territory Names will only be allowed in compliance with the restrictions as outlined in the answer to Question 22.

Name Allocation Policy

As described above, Web.com plans on implementing an extended Sunrise A period for Trademark Holders and a Sunrise B Period for domain name holders. In addition, our current plans call for incorporating a Landrush Period during which applicants can secure preferred .web domains, followed by a General Availability. With the exception of the Sunrise B Period, all registrations will occur on a first come first served basis. Web.com reserves the right to adjust this allocation Policy as it works through implementation details.

Acceptable Use Policy

Web.com has developed a draft the Registry Operator Acceptable Use Policy (AUP) which is further described in our response to Question 28. This AUP clearly defines what type of behavior is expressly prohibited in conjunction with the use of a .web domain name. Web.com will require, through the Registry Registrar Agreement (RRA), that this AUP be included in the registration agreement used by all .web gTLD accredited registrars. This registration agreement must be agreed upon by a registrant prior to them being able to register a name in the .web gTLD.

2 MECHANISMS DESIGNED TO IDENTIFY AND ADDRESS THE ABUSIVE USE OF REGISTERED NAMES ON AN ONGOING BASIS

In addition to the Sunrise and Trademark Claims services described in Section 1 of this response, Web.com will implement and adhere to RPMs post-launch as mandated by ICANN, and confirm that registrars accredited for the .web gTLD are in compliance with these mechanisms. Certain aspects of these post-launch RPMs may be administered on behalf of Web.com by Web.com-approved registrars or by approved subcontractors of Web.com, such as its selected backend registry services provider, Verisign.

These post-launch RPMs include the established Uniform Domain Name Dispute Resolution Policy (UDRP), as well as the newer Uniform Rapid Suspension System (URS) and Trademark Post-Delegation Dispute Resolution Procedure (PDDRP). Where applicable, Web.com will implement all determinations and decisions issued under the corresponding RPM.

After a domain name is registered, trademark holders may object to the registration through the UDRP or URS. Objections to the operation of the gTLD can be made through the PDDRP.

The following descriptions provide implementation details of each post-launch RPM for the .web gTLD:

- UDRP: The UDRP provides a mechanism for complainants to object to domain name registrations. The complainant files its objection with a UDRP provider and the domain name registrant has an opportunity to respond. The UDRP provider makes a decision based on the papers filed. If the complainant is successful, ownership of the domain name registration is transferred to the complainant. If the complainant is not successful, ownership of the domain name remains with the domain name registrant. Web.com and entities operating on its behalf adhere to all decisions rendered by UDRP providers.
- URS: As provided in the Applicant Guidebook, all registries are required to implement the URS. Similar to the UDRP, a complainant files its

objection with a URS provider. The URS provider conducts an administrative review for compliance with filing requirements. If the complaint passes review, the URS provider notifies the registry operator and locks the domain. A domain lock means that the registry restricts all changes to the registration data, but the name will continue to resolve. After the domain is locked, the complaint is served to the domain name registrant, who has an opportunity to respond accordingly. If the complainant is successful, the registry operator is informed and the domain name is suspended for the balance of the registration period; the domain name will not resolve to the original source, but to an informational approved web page provided by the URS provider. If the complainant is not successful, the URS is terminated and full control of the domain name registration is returned to the domain name registrant. Similar to the existing UDRP, Web.com and entities operating on its behalf adhere to decisions rendered by the URS providers.

- PDDRP: As provided in the Applicant Guidebook, all registries are required to implement the PDDRP. The PDDRP provides a mechanism for a complainant to object to the registry operator's manner of operation or use of the gTLD. The complainant files its objection with a PDDRP provider, who performs a threshold review. The registry operator has the opportunity to respond and the provider issues its determination based on the papers filed, although there may be opportunity for further discovery and a hearing. Web.com participates in the PDDRP process as specified in the Applicant Guidebook.

Additional Measures Specific to Rights Protection. Web.com provides additional measures against abusive registrations. These measures will assist with mitigation of, but are not limited to, the following activities: phishing, pharming, and other Internet security threats. The measures exceed the minimum requirements for RPMs defined by Specification 7 of the Registry Agreement and are available at the time of registration.

These measures include:

- Rapid Takedown or Suspension Based on Court Orders: Web.com complies promptly with any order from a court of competent jurisdiction that directs it to take any action on a domain name that is within its technical capabilities as a gTLD registry. These orders may be issued when abusive content, such as but not limited to child pornography, counterfeit goods or illegal pharmaceuticals, is associated with the domain name.
- Anti-Abuse Process: Web.com implements an anti-abuse process that is executed based on the type of domain name takedown requested. The anti-abuse process is for malicious exploitation of the DNS infrastructure, such as phishing, botnets, and malware.
- Authentication Procedures: Verisign, Web.com's selected backend registry services provider, uses two-factor authentication to enhance security protocols for telephone, email, and chat communications.
- Registry Lock: Verisign's Registry Lock service allows registrants to lock a domain name at the authoritative registry level to protect against both unintended and malicious changes, deletions, and transfers. Only Verisign, as Web.com's backend registry services provider, can release the lock; thus all other entities that normally are permitted to update Shared Registration System (SRS) records are prevented from doing so. This lock is released only after the authorized registrar makes the request to unlock.
- Malware Code Identification: This safeguard reduces opportunities for abusive behaviors that use registered domain names in the gTLD. Registrants are often unknowing victims of malware exploits. As Web.com's backend registry services provider, Verisign has developed proprietary code to help identify malware in the zones it manages, which in turn helps registrars by identifying malicious code hidden in their domain names.
- DNSSEC Signing Service: Domain Name System Security Extensions (DNSSEC) helps mitigate pharming and phishing attacks that use cache poisoning to redirect unsuspecting users to fraudulent websites or addresses. It uses public key cryptography to digitally sign DNS data when it comes into

the system and then validate it at its destination. The .web gTLD is DNSSEC-enabled as part of Verisign's core backend registry services.

- Biannual Whois Verification As detailed in our response to Question 28, all .web gTLD accredited registrars will be required as part of their RRA with Web.com to perform a Whois confirmation process twice a year. By asking registrants to confirm this information every 6 months, the .web gTLD should have a higher level of accurate Whois information for registered names in the event there is a case of trademark infringement by a non authorized registrant. Having accurate Whois information is critical to solving these issues in a timely manner.

- Participation in Anti-abuse Community Activities. Since our founding in 1997, Web.com has been an active participant and leader in multiple organizations, symposia, forums and other efforts that focus on the prevention of domain name abuse, including trademark infringement. Specifically, we are an active member of the Certificate Authentication Board, ICANN, the Internet standards development community, and we participate in SSAC. We find this participation extremely helpful in staying abreast of the latest changes and challenges in this field. Participation in these efforts also allows us to not only share our best practices with the rest of the anti-abuse community, but to learn from what others have been doing and incorporate it into how we operate our business. As mentioned earlier in this question, Web.com will be incorporating some of the SSWG enhanced security standards which is proof that community led efforts can produce significant results.

3. RESOURCING PLANS

Resource Planning

Web.com is a leading provider of Internet services for small to medium-sized businesses (SMBs). Web.com is the parent company of two global domain name registrars and further meets the Internet needs of consumers and businesses throughout their lifecycle with affordable value added services that including domain name registration, website design, search engine optimization, search engine marketing, social media and mobile products, local sales leads, eCommerce solutions and call center services. Headquartered in Jacksonville, FL, USA, Web.com is NASDAQ traded company serving nearly three million customers with more than 1,700 global employees in fourteen locations in North America, South America and the United Kingdom.

Our business is helping people establish, maintain, promote, and optimize their web presence. Web.com intentionally chose Verisign as our registry services provider because of their unsurpassed track record in operating some of the world's most complex and critical top level domains. Verisign's support for the .web gTLD will help ensure its success

The .web gTLD will be fully supported by a cross function team of Web.com professionals. Numbers and types of employees will vary for each function but Web.com projects it will use the following personnel to support the resource planning requirements;

- Quality Assurance Engineer: 0.5 FTE
- System Administrator: 1 FTE
- Database Administrator: 0.5 FTE
- Technical Project Manager: 0.5 FTE
- Marketing Director: 1 FTE
- Sales Manager: 1 FTE
- Legal Counsel: 1 FTE
- Finance/Accounting: 1 FTE
- Customer Service: 2 FTEs

Resource Planning Specific to Backend Registry Activities

Verisign, Web.com's selected backend registry services provider, is the most

experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely modifies these staffing models to account for new tools, standards and policy implementations and process innovations. These models enable Verisign to continually allocate the appropriate staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for this gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services it will extend to Web.com fully accounts for cost related to this infrastructure, which is provided as Line IIb.G, Total Critical Registry Function Cash Outflows, within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability at 100 percent of the time for more than 13 years for .com, which exceeds the current several level agreements, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's gTLD service offerings.

Verisign projects it will use the following personnel roles, which are described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support the implementation of RPMs:

- Customer Affairs Organization: 9
- Customer Support Personnel: 36
- Information Security Engineers: 11

To implement and manage the .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of gTLDs. Consistent with its resource modeling, Verisign frequently reviews the level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify qualified and skilled candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its gTLDs instead of creating a new entity to manage only this proposed gTLD, Verisign realizes significant economies of scale and ensures its gTLD best practices are followed consistently. This consistent demonstration of best practices helps ensure the security and stability of both the Internet and this proposed gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest gTLDs (i.e., .com). Moreover, by augmenting existing teams, Verisign ensures new employees are provided the opportunity to be trained and mentored by existing senior staff. This coaching and mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

30(a). Security Policy: Summary of the security policy for the proposed registry

THREATS AND SECURITY VULNERABILITIES AND TAKING APPROPRIATE STEPS TO RESOLVE THEM

Please note; all figures, tables and diagrams referenced in the following response can be found in attachment titled "Attachment dot web Q30A."

Web.com Group, Inc. ("Web.com") selected backend registry services provider's (Verisign's) comprehensive security policy has evolved over the years as part of managing some of the world's most critical TLDs. Verisign's Information Security Policy is the primary guideline that sets the baseline for all other policies, procedures, and standards that Verisign follows. This security policy addresses all of the critical components for the management of backend registry services, including architecture, engineering, and operations.

Verisign's general security policies and standards with respect to these areas are provided as follows:

- Architecture
 - Information Security Architecture Standard: This standard establishes the Verisign standard for application and network architecture. The document explains the methods for segmenting application tiers, using authentication mechanisms, and implementing application functions.
 - Information Security Secure Linux Standard: This standard establishes the information security requirements for all systems that run Linux throughout the Verisign organization.
 - Information Security Secure Oracle Standard: This standard establishes the information security requirements for all systems that run Oracle throughout the Verisign organization.
 - Information Security Remote Access Standard: This standard establishes the information security requirements for remote access to terminal services throughout the Verisign organization.
 - Information Security SSH Standard: This standard establishes the information security requirements for the application of Secure Shell (SSH) on all systems throughout the Verisign organization.
- Engineering
 - Secure SSL/TLS Configuration Standard: This standard establishes the information security requirements for the configuration of Secure Sockets Layer/Transport Layer Security (SSL/TLS) for all systems throughout the Verisign organization.
 - Information Security C++ Standards: These standards explain how to use and implement the functions and application programming interfaces (APIs) within C++. The document also describes how to perform logging, authentication, and database connectivity.
 - Information Security Java Standards: These standards explain how to use and implement the functions and APIs within Java. The document also describes how to perform logging, authentication, and database connectivity.
- Operations
 - Information Security DNS Standard: This standard establishes the information security requirements for all systems that run DNS systems throughout the Verisign organization.
 - Information Security Cryptographic Key Management Standard: This standard provides detailed information on both technology and processes for the use of encryption on Verisign information security systems.
 - Secure Apache Standard: Verisign has a multitude of Apache web servers, which are used in both production and development environments on the Verisign intranet and on the Internet. They provide a centralized, dynamic, and extensible interface to various other systems that deliver information to the end user. Because of their exposure and the confidential nature of the data that these systems host, adequate security measures must be in place. The Secure Apache Standard establishes the information security requirements for all systems that run Apache web servers throughout the Verisign organization.

- Secure Sendmail Standard: Verisign uses sendmail servers in both the production and development environments on the Verisign intranet and on the Internet. Sendmail allows users to communicate with one another via email. The Secure Sendmail Standard establishes the information security requirements for all systems that run sendmail servers throughout the Verisign organization.
- Secure Logging Standard: This standard establishes the information security logging requirements for all systems and applications throughout the Verisign organization. Where specific standards documents have been created for operating systems or applications, the logging standards have been detailed. This document covers all technologies.
- Patch Management Standard: This standard establishes the information security patch and upgrade management requirements for all systems and applications throughout Verisign.
- General
 - Secure Password Standard: Because passwords are the most popular and, in many cases, the sole mechanism for authenticating a user to a system, great care must be taken to help ensure that passwords are "strong" and secure. The Secure Password Standard details requirements for the use and implementation of passwords.
 - Secure Anti-Virus Standard: Verisign must be protected continuously from computer viruses and other forms of malicious code. These threats can cause significant damage to the overall operation and security of the Verisign network. The Secure Anti-Virus Standard describes the requirements for minimizing the occurrence and impact of these incidents.

Security processes and solutions for the .web gTLD are based on the standards defined above, each of which is derived from Verisign's experience and industry best practice. These standards comprise the framework for the overall security solution and applicable processes implemented across all products under Verisign's management. The security solution and applicable processes include, but are not limited to:

- System and network access control (e.g., monitoring, logging, and backup)
- Independent assessment and periodic independent assessment reports
- Denial of service (DoS) and distributed denial of service (DDoS) attack mitigation
- Computer and network incident response policies, plans, and processes
- Minimization of risk of unauthorized access to systems or tampering with registry data
- Intrusion detection mechanisms, threat analysis, defenses, and updates
- Auditing of network access
- Physical security

Further details of these processes and solutions are provided in Part B of this response.

1.1 Security Policy and Procedures for the Proposed Registry
 Specific security policy related details, requested as the bulleted items of Question 30 - Part A, are provided here.

Independent Assessment and Periodic Independent Assessment Reports. To help ensure effective security controls are in place, Web.com, through its selected backend registry services provider, Verisign, conducts a yearly American Institute of Certified Public Accountants (AICPA) and Canadian Institute of Chartered Accountants (CICA) SAS 70 audit on all of its data centers, hosted systems, and applications. During these SAS 70 audits, security controls at the operational, technical, and human level are rigorously tested. These audits are conducted by a certified and accredited third party and help ensure that Verisign in-place environments meet the security criteria specified in Verisign's customer contractual agreements and are in accordance with commercially accepted security controls and practices.

Verisign also performs numerous audits throughout the year to verify its security processes and activities. These audits cover many different environments and technologies and validate Verisign's capability to protect its registry and DNS resolution environments. Figure 30A-1 lists a subset of the audits that Verisign conducts. For each audit program or certification listed in Figure 30A-1, Verisign has included, as attachments to the Part B component of this response, copies of the assessment reports conducted by the listed third-party auditor. From Verisign's experience operating registries, it has determined that together these audit programs and certifications provide a reliable means to ensure effective security controls are in place and that these controls are sufficient to meet ICANN security requirements and therefore are commensurate with the guidelines defined by ISO 27001.

Augmented Security Levels or Capabilities. See Section 5 of this response.

Commitments Made to Registrants Concerning Security Levels. See Section 4 of this response.

2 SECURITY CAPABILITIES ARE CONSISTENT WITH THE OVERALL BUSINESS APPROACH AND PLANNED SIZE OF THE REGISTRY

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed and uses proprietary system scaling models to guide the growth of its TLD supporting infrastructure. These models direct Verisign's infrastructure scaling to include, but not be limited to, server capacity, data storage volume, and network throughput that are aligned to projected demand and usage patterns. Verisign periodically updates these models to account for the adoption of more capable and cost-effective technologies.

Verisign's scaling models are proven predictors of needed capacity and related cost. As such, they provide the means to link the projected infrastructure needs of the .web gTLD with necessary implementation and sustainment cost. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its scaling models, Verisign derived the necessary infrastructure required to implement and sustain this gTLD. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

3 TECHNICAL PLAN ADEQUATELY RESOURCED IN THE PLANNED COSTS DETAILED IN THE FINANCIAL SECTION

Resource Planning

Web.com is a leading provider of Internet services for small to medium-sized businesses (SMBs). Web.com is the parent company of two global domain name registrars and further meets the Internet needs of consumers and businesses throughout their lifecycle with affordable value added services that including domain name registration, website design, search engine optimization, search engine marketing, social media and mobile products, local sales leads, eCommerce solutions and call center services. Headquartered in Jacksonville, FL, USA, Web.com is NASDAQ traded company serving nearly three million customers with more than 1,700 global employees in fourteen locations in North America, South America and the United Kingdom.

Our business is helping people establish, maintain, promote, and optimize their web presence. Web.com intentionally chose Verisign as our registry services provider because of their unsurpassed track record in operating some of the world's most complex and critical top level domains. Verisign's support for the .web gTLD will help ensure its success.

The .web gTLD will be fully supported by a cross function team of Web.com

professionals. Numbers and types of employees will vary for each function but Web.com projects it will use the following personnel to support the resource planning requirements:

- Quality Assurance Engineer: 0.5 FTE
- System Administrator: 1 FTE
- Database Administrator: 0.5 FTE
- Technical Project Manager: 0.5 FTE
- Marketing Director: 1 FTE
- Sales Manager: 1 FTE
- Legal Counsel: 1 FTE
- Finance/Accounting: 1 FTE
- Customer Service: 2 FTES

Resource Planning Specific to Backend Registry Activities

Verisign, Web.com's selected backend registry services provider, is an experienced backend registry provider that has developed a set of proprietary resourcing models to project the number and type of personnel resources necessary to operate a TLD. Verisign routinely adjusts these staffing models to account for new tools and process innovations. These models enable Verisign to continually right-size its staff to accommodate projected demand and meet service level agreements as well as Internet security and stability requirements. Using the projected usage volume for the most likely scenario (defined in Question 46, Template 1 - Financial Projections: Most Likely) as an input to its staffing models, Verisign derived the necessary personnel levels required for this gTLD's initial implementation and ongoing maintenance. Verisign's pricing for the backend registry services it provides to Web.com fully accounts for cost related to this infrastructure, which is provided as "Total Critical Registry Function Cash Outflows" (Template 1, Line IIb.G) within the Question 46 financial projections response.

Verisign employs more than 1,040 individuals of which more than 775 comprise its technical work force. (Current statistics are publicly available in Verisign's quarterly filings.) Drawing from this pool of on-hand and fully committed technical resources, Verisign has maintained DNS operational accuracy and stability 100 percent of the time for more than 13 years for .com, proving Verisign's ability to align personnel resource growth to the scale increases of Verisign's TLD service offerings.

Verisign projects it will use the following personnel role, which is described in Section 5 of the response to Question 31, Technical Overview of Proposed Registry, to support its security policy:

- Information Security Engineers: 11

To implement and manage the .web gTLD as described in this application, Verisign, Web.com's selected backend registry services provider, scales, as needed, the size of each technical area now supporting its portfolio of TLDs. Consistent with its resource modeling, Verisign periodically reviews the level of work to be performed and adjusts staff levels for each technical area.

When usage projections indicate a need for additional staff, Verisign's internal staffing group uses an in-place staffing process to identify qualified candidates. These candidates are then interviewed by the lead of the relevant technical area. By scaling one common team across all its TLDs instead of creating a new entity to manage only the .web gTLD, Verisign realizes significant economies of scale and ensures its TLD best practices are followed consistently. This consistent application of best practices helps ensure the security and stability of both the Internet and this the .web gTLD, as Verisign holds all contributing staff members accountable to the same procedures that guide its execution of the Internet's largest TLDs (i.e., .com and .net). Moreover, by augmenting existing teams, Verisign affords new employees the opportunity to be mentored by existing senior

staff. This mentoring minimizes start-up learning curves and helps ensure that new staff members properly execute their duties.

4 SECURITY MEASURES ARE CONSISTENT WITH ANY COMMITMENTS MADE TO REGISTRANTS REGARDING SECURITY LEVELS

Verisign is Web.com's selected backend registry services provider. For the .web gTLD, no unique security measures or commitments must be made by Verisign or Web.com to any registrant.

5 SECURITY MEASURES ARE APPROPRIATE FOR THE APPLIED-FOR gTLD STRING (FOR EXAMPLE, APPLICATIONS FOR STRINGS WITH UNIQUE TRUST IMPLICATIONS, SUCH AS FINANCIAL SERVICES-ORIENTED STRINGS, WOULD BE EXPECTED TO PROVIDE A COMMENSURATE LEVEL OF SECURITY)

No unique security measures are necessary to implement the .web gTLD. As defined in Section 1 of this response, Verisign, Web.com's selected backend registry services provider, commits to providing backend registry services in accordance with the following international and relevant security standards:

- American Institute of Certified Public Accountants (AICPA) and Canadian Institute of Chartered Accountants (CICA) SAS 70
- WebTrust/SysTrust for Certification Authorities (CA)

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EXHIBIT JZ-45

ICANN Board Rationales for the Approval of the Launch of the New gTLD Program

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1. ICANN Board Rationale for the Approval of the Launch of the New gTLD Program

1. ICANN Board Rationale for the Approval of the Launch of the New gTLD Program

I. WHY NEW gTLDs ARE BEING INTRODUCED

New gTLDs are being introduced because the community has asked for them. The launch of the new generic top-level domain (gTLD) program will allow for more innovation, choice and change to the Internet's addressing system, now constrained by only 22 gTLDs. In a world with over 2 billion Internet users – and growing – diversity, choice and competition are key to the continued success and reach of the global network. New gTLDs will bring new protections to consumers (as well as brand holders and others) that do not exist today in the Domain Name System (DNS). Within this safer environment, community and cultural groups are already anticipating how they can bring their groups together in new and innovative ways. Companies and consumers that do not use the Latin alphabet will be brought online in their own scripts and languages. Industries and companies will have the opportunity to explore new ways to reach customers. The years of community work in planning have produced a robust implementation plan, and it is time to see that plan through to fruition.

II. FOLLOWING ICANN'S MISSION AND COMMUNITY DEVELOPED PROCESSES

A. Introduction of new TLDs is a core part of ICANN's Mission

When ICANN was formed in 1998 as a not for profit, multi-stakeholder organization dedicated to coordinating the Internet's addressing system, a purpose was to promote competition in the DNS marketplace, including by developing a process for the introduction of new generic top-level domains while ensuring internet security and stability. The introduction of new top-level domains into the DNS has thus been a fundamental part of ICANN's mission from its inception, and was specified in ICANN's Memorandum of Understanding and Joint Project Agreement with the U.S. Department of Commerce.¹

ICANN initially created significant competition at the registrar level, which has resulted in enormous benefits for consumers. ICANN's community and Board has now turned its attention to fostering competition in the registry market. ICANN began this process with the "proof of concept" round for the addition of a limited number of new generic Top Level Domains ("gTLDs") in 2000, and then permitted a limited number of additional "sponsored" TLDs in 2004-2005. These additions to the root demonstrated that TLDs could be added without adversely affecting the security and stability of the domain name system. Follow on economic studies indicated that, while benefits accruing from innovation are difficult to predict, that the introduction of new gTLDs will bring benefits in the form of increased competition, choice and new services to Internet users. The

¹ ICANN's Bylaws articulate that the promotion of competition in the registration of domain names is one of ICANN's core missions. See ICANN Bylaws, Article 1, Section 2.6.

studies also stated that taking steps to mitigate the possibility of rights infringement and other forms of malicious conduct would result in maximum net social benefits.

B. The Community Created a Policy Relating to the Introduction of new gTLDs

After an intensive policy development process, in August 2007, the Generic Names Supporting Organization issued a lengthy report in which it recommended that ICANN expand the number of gTLDs. See <http://gnso.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>. Contributing to this policy work were ICANN's Governmental Advisory Committee ("GAC"), At-Large Advisory Committee ("ALAC"), County Code Names Supporting Organization ("ccNSO") and Security and Stability Advisory Committee ("SSAC"). The policy development process culminated with Board approval in June 2008. See http://www.icann.org/en/minutes/resolutions-26jun08.htm#_Toc76113171.

III. COMMUNITY INVOLEMENT WAS KEY IN IMPLEMENTATION PLANNING

Since the June 2008 decision, the community has been hard at work creating, commenting on, and refining the implementation of this policy.

Seven versions of the Applicant Guidebook have been published. Fifty-eight explanatory memoranda have been produced. There have been nearly 50 new gTLD-related public comment sessions, over these documents as well as a variety of excerpts and working group reports. Over 2,400 comments were received through those public comment fora, which have been summarized and analyzed, and considered in revisions to the new gTLD program. Over 1,350 pages of summary and analysis have been produced. The community has also participated in numerous workshops and sessions and open microphone public forums at ICANN meetings, providing additional suggestions for the improvement of the new gTLD program. ICANN has listened to all of these community comments in refining the program that is being approved today.

Nearly every ICANN Supporting Organization and Advisory Committee was represented in targeted community-based working groups or expert teams formed to address implementation issues. The GNSO and its component stakeholder groups and constituencies participated in all aspects of the implementation work arising out of its policy recommendations. The ccNSO was particularly active on issues relating to internationalized domain names (IDNs) and the treatment of geographical names in the new gTLD program.

ICANN's technical Advisory Committees provided direct input into the implementation work. For example, RSSAC and SSAC provided expert analysis that there is no expected significant impact of new gTLDs on the stability and scalability of the root server system.

ALAC members served on nearly every working group and team, and actively participated in all public comment fora, giving the world's Internet users a voice in implementation discussions.

IV. CONSULTATION WITH THE GAC LEAD TO IMPROVEMENTS

Under the ICANN Bylaws, the GAC has an assurance that the Board will take GAC advice into account. The Board, through an extensive and productive consultation process with the GAC, has considered the GAC's advice on the new gTLD program and resolved nearly all of the areas where there were likely differences between the GAC advice and the Board's positions.

The ICANN Board and the GAC held a landmark face-to-face consultation on 28 February – 1 March 2011 and subsequently exchanged written comments on various aspects of the new gTLD Program. On 15 April 2011, ICANN published a revised Applicant Guidebook, taking into account many compromises with the GAC as well as additional community comment. On 20 May 2011, the GAC and the ICANN Board convened another meeting by telephone, and continued working through the remaining differences between the Board and GAC positions. See <http://www.icann.org/en/announcements/announcement-22may11-en.htm>. On 26 May 2011, the GAC provided its comments on the 15 April 2011 Applicant Guidebook, and the GAC comments were taken into consideration in the production of the 30 May 2011 Applicant Guidebook.

On 19 June 2011, the ICANN Board and GAC engaged in a further consultation over the remaining areas where the Board's approval of the launch of the new gTLD program may not be consistent with GAC advice. At the beginning of the GAC consultation process, there were 12 issues under review by the GAC and the Board, with 80 separate sub-issues. The GAC and the Board have identified mutually acceptable solutions for nearly all of these sub-issues. Despite this great progress and the good faith participation of the GAC and the Board in the consultation process, a few areas remain where the GAC and the Board were not able to reach full agreement. The reasons why these items of GAC advice were not followed are set forth in responses to the GAC such as Board responses to item of GAC Advice.

V. MAJOR IMPLEMENTATION ISSUES HAVE BEEN THOROUGHLY CONSIDERED

The launch of the new gTLDs has involved the careful consideration of many complex issues. Four overarching issues, along with several other major substantive topics have been addressed through the new gTLD implementation work. Detailed rationale papers discussing the approval of the launch of the program as it relates to nine of those topics are included here. These nine topics are:

- Evaluation Process
- Fees
- Geographic Names
- Mitigating Malicious Conduct
- Objection Process
- Root Zone Scaling
- String Similarity and String Contention
- Trademark Protection.

Detailed rationales have already been produced and approved by the Board in support of its decisions relating to two other topics, Cross Ownership, at <http://www.icann.org/en/minutes/rationale-cross-ownership-21mar11-en.pdf> and Economic Studies, at <http://www.icann.org/en/minutes/rationale-economic-studies-21mar11-en.pdf>, each approved on 25 January 2011.

VI. CONCLUSION

The launch of the new gTLD program is in fulfillment of a core part of ICANN's Bylaws: the introduction of competition and consumer choice in the DNS. After the ICANN community created a policy recommendation on the expansion of the number of gTLDs, the community and ICANN have worked tirelessly to form an implementation plan. The program approved for launch today is robust and will provide new protections and opportunities within the DNS.

The launch of the new gTLD program does not signal the end of ICANN's or the community's work. Rather, the launch represents the beginning of new opportunities to better shape the further introduction of new gTLDs, based upon experience. After the launch of the first round of new gTLDs, a second application window will only be opened after ICANN completes a series of assessments and refinements – again with the input of the community. The Board looks forward to the continual community input on the further evolution of this program.

The Board relied on all members of the ICANN community for the years of competent and thorough work leading up to the launch of the new gTLD program. Within the implementation phase alone, the community has devoted tens of thousands of hours to this process, and has created a program that reflects the best thought of the community. This decision represents ICANN's continued adherence to its mandate to introduce competition in the DNS, and also represents the culmination of an ICANN community policy recommendation of how this can be achieved.

2. ICANN Board Rationale on the Evaluation Process Associated with the gTLD Program

2. ICANN Board Rationale on the Evaluation Process Associated with the gTLD Program

I. Introduction

Through the development of the new gTLD program, one of the areas that required significant focus is a process that allows for the evaluation of applications for new gTLDs. The Board determined that the evaluation and selection procedure for new gTLD registries should respect the principles of fairness, transparency and non-discrimination.

Following the policy advice of the GNSO, the key goal for the evaluation process was to establish criteria that are as objective and measurable as possible. ICANN worked through the challenge of creating criteria that are measurable, meaningful (i.e., indicative of the applicant's capability and not easily manipulated), and also flexible enough to facilitate a diverse applicant pool. In the end, ICANN has implemented a global, robust, consistent and efficient process that will allow any public or private sector organization to apply to create and operate a new gTLD.

II. Brief History of ICANN's Analysis of the Evaluation Process Associated with the gTLD Program

This section sets forth a brief history of the significant actions on the subject of the evaluation process associated with the gTLD program.

- In December 2005, the GNSO commenced a policy development process to determine whether (and the circumstances under which) new gTLDs would be added. A broad consensus was achieved that new gTLDs should be added to the root in order to stimulate competition further and for numerous other reasons.

- In August of 2007, the GNSO issued its final report regarding the introduction of new gTLDs.
<http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>
- At the 2 November 2007 ICANN Board Meeting, the Board considered the GNSO's policy recommendation and passed a resolution requesting that ICANN staff continue working on the implementation analysis for the introduction of the new gTLD program and report back to the Board with a report on implementation issues.
<http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>; http://www.icann.org/minutes/resolutions-02nov06.htm#_Toc89933880
- Starting with the November 2007 Board meeting, the Board began to consider issues related to the selection procedure for new gTLDs, including the need for the process to respect the principles of fairness, transparency and non-discrimination.
- On 20 November 2007, the Board discussed the need for a detailed and robust evaluation process, to allow applicants to understand what is expected of them in the process and to provide a roadmap. The process should include discussion of technical criteria, business and financial criteria, and other specifications. ICANN proceeded to work on the first draft of the anticipated request for proposals.
<http://www.icann.org/en/minutes/minutes-18dec07.htm>
- On 23 October 2008, ICANN posted the Draft Applicant Guidebook, including an outline of the evaluation procedures (incorporating both reviews of the applied-for gTLD string and of the applicant), as well as the intended application questions and scoring criteria. These were continually revised, updated, and posted for comment through successive drafts of the Guidebook.
<http://www.icann.org/en/topics/new-gtlds/comments-en.htm>

- Between June and September 2009, KPMG conducted a benchmarking study on ICANN’s behalf, with the objective of identifying benchmarks based on registry financial and operational data. The KPMG report on Benchmarking of Registry Operations (“KPMG Benchmarking Report”) was designed to be used as a reference point during the review of new gTLD applications.
- In February 2010, ICANN published an overview of the KPMG Benchmarking Report. This overview stated that ICANN commissioned the study to gather industry data on registry operations as part of the ongoing implementation of the evaluation criteria and procedures for the new gTLD program.
<http://icann.org/en/topics/new-gtlds/benchmarking-report-15feb10-en.pdf> [Rationale-all -final-20110609.doc](#)
- On 30 May 2011, ICANN posted the Applicant Guidebook for consideration by the Board. This lays out in full the proposed approach to the evaluation of gTLD applications.

III. Analysis and Consideration of the Evaluation Process

A. Policy Development Guidance

The GNSO’s advice included the following:

- The evaluation and selection procedure for new gTLD registries should respect the principles of fairness, transparency and non-discrimination.
- All applicants for a new gTLD registry should therefore be evaluated against transparent and predictable criteria, fully available to the applicants prior to the initiation of the process. Normally, therefore, no subsequent additional selection criteria should be used in the selection process.
- Applicants must be able to demonstrate their technical capability to run a registry operation for the purpose that the applicant sets out.

- Applicants must be able to demonstrate their financial and organisational operational capability.
- There must be a clear and pre-published application process using objective and measurable criteria.

B. Implementation of Policy Principles

Publication of the Applicant Guidebook has included a process flowchart which maps out the different phases an application must go through, or may encounter, during the evaluation process. There are six major components to the process: (1) Application Submission/Background Screening; (2) Initial Evaluation; (3) Extended Evaluation; (4) Dispute Resolution; (5) String Contention and (6) Transition to Delegation. All applications must pass the Initial Evaluation to be eligible for approval.

The criteria and evaluation processes used in Initial Evaluation are designed to be as objective as possible. With that goal in mind, an important objective of the new TLD process is to diversify the namespace, with different registry business models and target audiences. In some cases, criteria that are objective, but that ignore the differences in business models and target audiences of new registries, will tend to make the process exclusionary. The Board determined that the process must provide for an objective evaluation framework, but also allow for adaptation according to the differing models applicants will present.

The Board set out to create an evaluation process that strikes a correct balance between establishing the business and technical competence of the applicant to operate a registry, while not asking for the detailed sort of information that a venture capitalist may request. ICANN is not seeking to certify business success but instead seeks to encourage innovation while providing certain safeguards for registrants.

Furthermore, new registries must be added in a way that maintains DNS stability and security. Therefore, ICANN has created an evaluation process that

asks several questions so that the applicant can demonstrate an understanding of the technical requirements to operate a registry.

After a gTLD application passes the financial and technical evaluations, the applicant will then be required to successfully complete a series of pre-delegation tests. These pre-delegation tests must be completed successfully within a specified period as a prerequisite for delegation into the root zone.

C. Public Comment

Comments from the community on successive drafts of the evaluation procedures, application questions, and scoring criteria were also considered by the Board. In particular, changes were made to provide greater clarity on the information being sought, and to more clearly distinguish between the minimum requirements and additional scoring levels.

There was feedback from some that the evaluation questions were more complicated or cumbersome than necessary, while others proposed that ICANN should set a higher bar and perform more stringent evaluation, particularly in certain areas such as security. ICANN has sought to consider and incorporate these comments in establishing a balanced approach that results in a rigorous evaluation process in line with ICANN's mission for what is to be the initial gTLD evaluation round. See <http://www.icann.org/en/topics/new-gtlds/comments-analysis-en.htm>.

IV. The Board's Analysis of the Evaluation Process Associated with the gTLD Program

A. Who the Board Consulted Regarding the Evaluation Process

- Legal Counsel
- The GNSO stakeholder groups

- ICANN’s Governmental Advisory Committee
- The At-Large Advisory Committee
- Various consultants were engaged throughout the process to assist in developing a methodology that would meet the above goals. These included InterIsle, Deloitte, KPMG, Gilbert and Tobin, and others.
- All other Stakeholders and Community members through public comment forums and other methods of participation.

B. What Significant Non-Privileged Materials the Board Reviewed

- Public Comments;
<http://icann.org/en/topics/new-gtlds/comments-analysis-en.htm>
- Benchmarking of Registry Operations;
<http://icann.org/en/topics/new-gtlds/benchmarking-report-15feb10-en.pdf>

C. What Factors the Board Found to Be Significant

The Board considered a number of factors in its analysis of the evaluation process for the new gTLD program. The Board found the following factors to be significant:

- the principle that the Board should base its decision on solid factual investigation and expert consultation and study;
- the addition of new gTLDs to the root in order to stimulate competition at the registry level;
- the responsibility of ensuring that new gTLDs do not jeopardize the security or stability of the DNS;

- an established set of criteria that are as objective and measurable as possible;
- the selection of independent evaluation panels with sufficient expertise, resources and geographic diversity to review applications for the new gTLD program; and
- an evaluation and selection procedure for new gTLD registries that respects the principles of fairness, transparency and non-discrimination.

V. The Board's Reasons for Concluding the Evaluation Process was Appropriate for the gTLD Program

- The evaluation process allows for any public or private sector organization to apply to create and operate a new gTLD. However, the process is not like simply registering or buying a second-level domain. ICANN has developed an application process designed to evaluate and select candidates capable of running a registry. Any successful applicant will need to meet the published operational and technical criteria in order to ensure a preservation of internet stability and interoperability.
- ICANN's main goal for the evaluation process was to establish criteria that are as objective and measurable as possible while providing flexibility to address a wide range of business models. Following the policy advice, evaluating the public comments, and addressing concerns raised in discussions with the community, the Board decided on the proposed structure and procedures of the evaluation process to meet the goals established for the program.

3. ICANN Board Rationale on Fees Associated With the gTLD Program

3. ICANN Board Rationale on Fees Associated With the gTLD Program

I. Introduction

The launch of the new gTLD program is anticipated to result in improvements to consumer choice and competition in the DNS. However, there are important cost implications, both to ICANN as a corporate entity and to gTLD applicants who participate in the program. It is ICANN's policy, developed through its bottom-up, multi-stakeholder process, that the application fees associated with new gTLD applications should be designed to ensure that adequate resources exist to cover the total cost of administering the new gTLD process. <http://www.icann.org/en/topics/new-gtlds/cost-considerations-23oct08-en.pdf>.

On 2 October 2009, the Board defined the directive approving the community's policy recommendations for the implementation of the new gTLD policy. That policy included that the implementation program should be fully self-funding. The Board has taken great care to estimate the costs with an eye toward ICANN's previous experience in TLD rounds, the best professional advice, and a detailed and thorough review of expected program costs. The new gTLD program requires a robust evaluation process to achieve its goals. This process has identifiable costs. The new gTLD implementation should be revenue neutral and existing ICANN activities regarding technical coordination of names, numbers and other identifiers should not cross-subsidize the new program. See <http://icann.org/en/topics/new-gtlds/cost-considerations-04oct09-en.pdf>

II. Brief History of ICANN's Analysis of Fees Associated with the gTLD Program

This section sets forth a brief history of the significant Board consideration on the subject of fees associated with the gTLD program.

- In December 2005 – September 2007, the GNSO conducted a rigorous policy development process to determine whether (and the

circumstances under which) new gTLDs would be added. A broad consensus was achieved that new gTLDs should be added to the root in order to stimulate competition further and for numerous other reasons and that evaluation fees should remain cost neutral to ICANN. The GNSO's Implementation Guideline B stated: "Application fees will be designed to ensure that adequate resources exist to cover the total cost to administer the new gTLD process."

- At the 2 November 2007 ICANN Board Meeting, the Board considered the GNSO's policy recommendation and passed a resolution requesting that ICANN staff continue working on the implementation analysis for the introduction of the new gTLD program and report back to the Board with a report on implementation issues.
<http://gnso.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>; http://www.icann.org/minutes/resolutions-02nov06.htm#_Toc89933880
- On 2 November 2007, the Board reviewed the ICANN Board or Committee Submission No. 2007-54 entitled Policy Development Process for the Delegation of New gTLDs. The submission discussed application fees and stated, "[a]pplication fees will be designed to ensure that adequate resources exist to cover the total cost to administer the new gTLD process. Application fees may differ for applicants."
<http://www.icann.org/en/minutes/minutes-18dec07.htm>.
- On 23 October 2008, ICANN published the initial draft version of the gTLD Applicant Guidebook, including an evaluation fee of USD 185,000 and an annual registry fee of USD 75,000.
<http://www.icann.org/en/topics/new-gtlds/comments-en.htm>
- At the 12 February 2009 Board Meeting, the ICANN Board discussed the new version of the Applicant Guidebook ("AGB"). The Board determined that the application fee should remain at the proposed fee of USD 185,000 but the annual minimum registry fee should be

reduced to USD 25,000, with a transaction fee at 25 cents per transaction. Analysis was conducted and budgets were provided to support the USD 185,000 fee. The decrease in of the registry fee to USD 25,000 was based on a level of effort to support registries.

<http://www.icann.org/en/minutes/minutes-12feb09.htm>

- On 6 March 2009, the Board reviewed ICANN Board Submission No. 2009-03-06-05 entitled Update on new gTLDs. The submission analyzed recent public comments and detailed how ICANN incorporated those comments and changes into the fee structure. It also pointed out that the annual registry fee was reduced to a baseline of USD 25,000 plus a per transaction fee of 25 cents once the registry has registered 50,000 names. Also, the submission highlighted a refund structure for the USD 185,000 evaluation fee, with a minimum 20% refund to all unsuccessful applicants, and higher percentages to applicants who withdraw earlier in the process.
- On 25 June, ICANN Published the New gTLD Program Explanatory Memorandum – New gTLD Budget which broke down the cost components of the USD 185,000 application fee.
<http://www.icann.org/en/topics/new-gtlds/new-gtld-budget-28may10-en.pdf>
- On 30 May 2011, ICANN posted a new version of the Applicant Guidebook, taking into account public comment and additional comments from the GAC.
<http://icann.org/en/topics/new-gtlds/comments-7-en.htm>

III. Major Principles Considered by the Board

A. Important Financial Considerations

The ICANN Board identified several financial considerations it deemed to be important in evaluating and deciding on a fee structure for the new gTLD program. On 23 October 2008, ICANN published an explanatory memorandum

describing its cost considerations and identified three themes which shaped the fee structure: (1) care and conservatism; (2) up-front payment/incremental consideration; and (3) fee levels and accessibility. See <http://www.icann.org/en/topics/new-gtlds/cost-considerations-23oct08-en.pdf>.

1. Care and Conservatism

ICANN coordinates unique identifiers for the Internet, and particularly important for this context, directly contracts with generic top level domain registries, and cooperates with country code registries around the world in the interest of security, resiliency and stability of the DNS. There are more than 170,000,000 second-level domain registrations that provide for a richness of communication, education and commerce, and this web is reaching ever more people around the world. ICANN's system of contracts, enforcement and fees that supports this system, particularly for the 105,000,000 registrations in gTLDs, must not be put at risk. Therefore, the new gTLD must be fully self funding.

The principle of care and conservatism means that each element of the application process must stand up to scrutiny indicating that it will yield a result consistent with the community-developed policy. A robust evaluation process, including detailed reviews of the applied-for TLD string, the applying entity, the technical and financial plans, and the proposed registry services, is in place so that the security and stability of the DNS are not jeopardized. While the Board thoughtfully considered process and cost throughout the process design, cost-minimization is not the overriding objective. Rather, process fidelity is given priority.

2. Up-Front Payment/Incremental Consideration

ICANN will collect the entire application fee at the time an application is submitted. This avoids a situation where the applicant gets part way through the application process, then may not have the resources to continue. It also assures that all costs are covered. However, if the applicant elects to withdraw its application during the process, ICANN will refund a prorated amount of the fees to the applicant.

A uniform evaluation fee for all applicants provides cost certainty with respect to ICANN fees for all applicants. Further, it ensures there is no direct cost penalty to the applicant for going through a more complex application (except, when necessary, fees paid directly to a provider). A single fee, with graduated refunds, and with provider payments (e.g. dispute resolution providers) made directly to the provider where these costs are incurred seems to offer the right balance of certainty and fairness to all applicants.

3. Fee Levels and Accessibility

Members of the GNSO community recognized that new gTLD registry applicants would likely come forward with a variety of business plans and models appropriate to their own specific communities, and there was a commitment that the evaluation and selection procedure for new gTLD registries should respect the principles of fairness, transparency, and non-discrimination.

Some community members expressed concern that financial requirements and fees might discourage applications from developing nations, or indigenous and minority peoples, who may have different sets of financial opportunities or capabilities relative to more highly developed regions of the world. The Board addressed these concerns with their “Application Support” program (which is discussed more in depth below).

B. Important Assumptions

In the explanatory memorandum on cost considerations published on 23 October 2008, ICANN identified the three assumptions on which it would rely in determining the fee structure for the program: (1) estimating methodology; (2) expected quantity of applications; and (3) the new gTLD program will be ongoing.

1. Estimating Methodology

Estimators for the various costs associated with the application evaluation strove to use a maximum-likelihood basis to estimate the costs. A detailed

approach was taken to get the best possible estimates. The evaluation process was divided into 6 phases, 24 major steps and 75 separate tasks. Twenty-seven separate possible outcomes were identified in the application process, probabilities were identified for reaching each of these states, and cost estimates were applied for each state. Estimates at this detailed level are likely to yield more accurate estimates than overview summary estimates.

Further, whenever possible, sensitivity analysis was applied to cost estimates. This means asking questions such as “How much would the total processing cost be if all applications went through the most complex path? Or “How much would the total processing cost be if all applications went through the simplest path?” Sensitivity analysis also helps to explore and understand the range of outcomes, and key decision points in the cost estimation mode.

2. Expected Quantity of Applications

While ICANN has asked constituents and experts, there is no sure way to estimate with certainty the number of new TLD applications that will be received. ICANN has based its estimates on an assumption of 500 applications in the first round. This volume assumption is based on several sources, including a report from a consulting economist, public estimates on the web, oral comments at public meetings and off-the-record comments by industry participants. While the volume assumption of 500 applications is consistent with many data points, there is no feasible way to make a certain prediction.

If there are substantially fewer than 500 applications, the financial risk is that ICANN would not recoup historical program development costs or fixed costs in the first round, and that higher fixed costs would drive the per unit application costs to be higher than forecast. Still, the total risk of a much smaller-than-anticipated round would be relatively low, since the number of applications would be low.

If there are substantially more than 500 applications, the risk is that application processing costs would again be higher than anticipated, as ICANN would need to bring in more outside resources to process applications in a timely

fashion, driving the variable processing costs higher. In this case, ICANN would be able to pay for these higher expected costs with greater-than-expected recovery of fixed cost components (historical program development and other fixed costs), thus at least ameliorating this element of risk.

3. The New gTLD Program Will Be Ongoing

ICANN’s goal is to launch subsequent gTLD application rounds as quickly as possible. The exact timing will be based on experiences gained and changes required after this round is completed. The goal is for the next application round to begin within one year of the close of the application submission period for the initial round.

It is reasonable to expect that various fees may be lower in subsequent application rounds, as ICANN processes are honed, and uncertainty is reduced.

C. Cost Elements Determined by the Board

1. Application Fee

The Board determined the application fee to be in the amount of USD 185,000. The application fee has been segregated into three main components: (a) Development Costs, (b) Risk Costs, and (c) Application Processing (see www.icann.org/en/topics/new-gtlds/cost-considerations-04oct09-en.pdf). The breakdown of each component is as follows (rounded):

Development Costs:	USD 27,000
Risk Costs:	USD 60,000
<u>Application Processing:</u>	<u>USD 98,000</u>
Application Fee:	USD 185,000

The application fee was also extrapolated and further analyzed under several assumptions including receiving 500 applications (see

www.icann.org/en/topics/new-gtlds/explanatory-memo-new-gtld-program-budget-22oct10-en.pdf).

a. Development Costs

These costs have two components:

i) Development costs which are the activities necessary to progress the implementation of the gTLD policy recommendations. This includes resolving open concerns, developing and completing the AGB, managing communication with the Internet community, designing and developing the processes and systems necessary to process applications in accordance with the final Guidebook, and undertaking the activities that have been deemed high risk or would require additional time to complete.

The costs associated with the Development Phase have been funded through normal ICANN budgetary process and the associated costs have been highlighted in ICANN's annual Operating Plan and Budget Documents

ii) Deployment costs which are the incremental steps necessary to complete the implementation of the application evaluation processes and system. Such costs require timing certainty and include the global communication campaign, on-boarding of evaluation panels, hiring of additional staff, payment of certain software licenses, and so on.

b. Risk Costs

These represent harder to predict costs and cover a number of risks that could occur during the program. Examples of such costs include variations between estimates and actual costs incurred or receiving a significantly low or high number of applications. ICANN engaged outside experts to assist with developing a risk framework and determining a quantifiable figure for the program.

c. Application Processing

Application Processing represents those costs necessary to accept and process new gTLD applications, conduct contract execution activities, and conduct pre-delegation checks of approved applicants prior to delegation into the root zone. Application processing costs consist of a variable and fixed costs.

Variable costs are those that vary depending on the number of applications that require a given task to be completed. Whereas fixed costs are necessary to manage the program and are not associated with an individual application.

The application fee is payable in the form of a USD 5,000 deposit submitted at the time the user requests application slots within the TLD Application System (“TAS”), and a payment of USD 180,000 submitted with the full application. See <http://icann.org/en/topics/new-gtlds/intro-clean-12nov10-en.pdf>.

2. Annual Registry Fee

ICANN’s Board has determined to place the Annual Registry Fee at a baseline of USD 25,000 plus a variable fee based on transaction volume where the TLD exceeds a defined transaction volume.

3. Refunds

In certain cases, refunds of a portion of the evaluation fee may be available for applications that are withdrawn before the evaluation process is complete. An applicant may request a refund at any time until it has executed a registry agreement with ICANN. The amount of the refund will depend on the point in the process at which the withdrawal is requested. Any applicant that has not been successful is eligible for, at a minimum, a 20% refund of the evaluation fee if it withdraws its application.

According to the AGB, the breakdown of possible refund scenarios is as follows:

Refund Available to Applicant	Percentage of Evaluation Fee	Amount of Refund
Within 21 calendar days of a GAC Early Warning	80%	USD 148,000
After posting of applications until posting of Initial Evaluations results	70%	USD 130,000
After posting Initial Evaluation Results	35%	USD 65,000
After the applicant has completed Dispute Resolution, Extended Evaluation, or String Contention Resolution(s)	20%	USD 37,000
After the applicant has registered into a registry agreement with ICANN		None

4. Application Support (JAS WG Charter)

As mentioned above, some community members expressed concerned that the financial requirements and fees might discourage applications from developing nations, or indigenous or minority peoples, who may have different financial opportunities. The Board addressed these concerns with their “Application Support” program, and recognized the importance of an inclusion in the new gTLD program by resolving that stakeholders work to “develop a sustainable approach to providing support to applicants requiring assistance in applying for and operating new gTLDs.” See <http://www.icann.org/en/minutes/resolutions-12mar10-en.htm#20>.

In direct response to this Board resolution, the GNSO Council proposed a Joint SO/AC Working Group (“JAS WG”), composed by members of ICANN’s Supporting Organizations (“SOs”) and Advisory Committees (“ACs”), to look into applicant support for new gTLDs. See <https://st.icann.org/so-ac-new-gtld-wg/index.cgi>.

IV. The Board’s Analysis of Fees

A. Why the Board Addressed Fees

- ICANN’s mission statement and one of its founding principles is to promote user choice and competition. ICANN has created significant competition at the registrar level that has resulted in enormous benefits for consumers. To date, ICANN has not created meaningful competition at the registry level. Based upon the report and recommendation from the GNSO to introduce new gTLDs, the Board decided to proceed with the new gTLD program.
- While the primary implications of the new gTLD program relate to possible improvements in choice and competition as a result of new domain names, there are also important cost implications, both to the ICANN corporate entity and to gTLD applicants. The Board initially determined that the application fees associated with new gTLD applications should be designed to ensure that adequate resources exist to cover the total cost to administer the new gTLD process.
- Both the Board and members of the community have commented on the application fee structure for the new gTLD program. From those comments the Board has determined that the new gTLD implementation should be fully self-funding and revenue neutral, and that existing ICANN activities regarding technical coordination of names, numbers, and other identifiers should not cross-subsidize the new program.

B. Who the Board Consulted Regarding Fees

- Legal Counsel
- The GNSO
- ICANN’s Supporting Organizations

- The ALAC
- The GAC
- Other ICANN Advisory Committees
- All other Stakeholders and Community members through public comment forums and other methods of participation.

C. Public Comments Considered by the Board

Over 1200 pages of feedback, from more than 300 entities, have been received since the first Draft AGB was published. The Board has analyzed and considered these comments in the context of the GNSO policy recommendations.. The Board received many comments on the fee structure, both the annual registry fee and application evaluation fee. Regarding the annual registry fee, the Board received comments stating that the annual minimum and percentage fee for registries was perceived by some to be too high.

Furthermore, the Board incorporated many suggestions from public comments pursuant to its JAS WG Application Support Program. <http://forum.icann.org/lists/soac-newgtldapsup-wg>.

D. What Factors the Board Found to Be Significant

The Board considered numerous factors in its analysis of fees. The Board found the following factors to be significant:

- The principle that the Board should base its decision on solid factual investigation and expert consultation and study;
- The addition of new gTLDs to the root in order to stimulate competition at the registry level;

- That the new gTLD implementation should be fully self funding and revenue neutral; and
- That existing ICANN activities regarding technical coordination of names, numbers, and other identifiers should not cross-subsidize the new program.
- That any revenue received in excess of costs be used in a manner consistent with community input.
- Evaluation fees will be re-evaluated after the first round and adjusted.

V. The Board's Reasons for Deciding the Proposed Fee Structure is Appropriate

While the primary implications of this new policy relate to possible improvements in choice and competition as a result of new domain names, there are also important cost implications, both to ICANN as a corporate entity and to gTLD applicants with regard to the implementation of the policy through the acceptance and processing of applications as set out in the policy adopted by the community and accepted by the Board.

After evaluating public comments, addressing initial concerns and carefully evaluating the twenty-seven separate possible outcomes that were identified in the application process, the Board decided on the proposed fee structure to ensure that the new gTLD implementation would be fully self-funding and revenue neutral.

4. ICANN Board Rationale on Geographic Names Associated with the gTLD Program

4. ICANN Board Rationale on Geographic Names Associated with the gTLD Program

I. Introduction

Through the development of the new gTLD program, one of the areas of interest to governments and other parties was the treatment of country/territory names and other geographic names. This area has been the subject of stakeholder input and discussion throughout the implementation process.

This memorandum focuses on the Board's consideration of the provisions for geographic names in the new gTLD program. The memorandum summarizes the Board's consideration of the issue, and the Board's rationale for implementing the new gTLD program containing the adopted measures on geographic names.

II. Brief History of ICANN's Consideration of Geographic Names Associated with The New gTLD Program

This section sets forth a brief history of significant actions on the subject of geographic names associated with the new gTLD program.

- In December 2005, the GNSO commenced a rigorous policy development process to determine whether (and the circumstances under which) new gTLDs would be added. A broad consensus was achieved that new gTLDs should be added to the root in order to further stimulate competition and for other reasons.
- On 28 March 2007, the GAC adopted principles to govern the introduction of new gTLDs (the "GAC Principles"). Sections 2.2 and 2.7 of the GAC Principles address geographic names issues at the top and second level.
 - 2.2 ICANN should avoid country, territory, or place names, and country, territory, or regional language or people descriptions, unless in agreement with the relevant governments or public authorities.
 - 2.7 Applicant registries for new gTLDs should pledge to: a) adopt, before the new gTLD is introduced, appropriate procedures for blocking, at no cost and upon demand of

governments, public authorities or IGOs, names with national or geographic significance at the second level of any new gTLD, and b) ensure procedures to allow governments, public authorities or IGOs to challenge abuses of names with national or geographic significance at the second level of any new gTLD.

http://gac.icann.org/system/files/gTLD_principles_0.pdf

- On 23 May 2007, the GNSO Reserved Names Working Group issued its final report. Recommendation 20 of the report stated that: (1) there should be no geographical reserved names; and (2) governments should protect their interests in certain names by raising objections on community grounds.
<http://gnso.icann.org/issues/new-gtlds/final-report-rn-wg-23may07.htm>
- On 8 August 2007, the GNSO issued its final report regarding the introduction of new gTLDs. Recommendation 20 of the report intended to provide protections for geographical names, stating that an application for a new gTLD should be rejected if an expert panel determines that there is substantial opposition to it from a significant portion of the community to which the string may be targeted.
<http://GNSO.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>
- On 26 June 2008, the Board approved the GNSO's Recommendations for the introduction of new gTLDs and directed staff to develop an implementation plan.
<http://www.icann.org/en/minutes/resolutions-26jun08.htm>
- On 24 October 2008, ICANN published Version 1 of the new gTLD Applicant Guidebook ("Version 1"), which incorporated various concepts set forth in the GAC Principles. Version 1 required applications involving geographic names to be accompanied by documents of support or non-objection from the relevant government authority. Geographic names included country and territory names, sub-national names on the ISO 3166-2 list, city names (if the applicant was intending to leverage the city name), and names of continents and regions included on a UN-maintained

list. <http://www.icann.org/en/topics/new-gtlds/draft-rfp-24oct08-en.pdf>

- The 24 October 2008 posting also included an explanatory memorandum on the topic of geographical names, describing the various considerations used in arriving at the proposed approach. <http://www.icann.org/en/topics/new-gtlds/geographic-names-22oct08-en.pdf>
- On 28 December 2008, the ccNSO commented on Version 1. The ccNSO stated that (1) the restriction of protections for country/territory names to the 6 official United Nations languages needed to be amended to translation in any language; and (2) All country names and territory names should be ccTLDs – not gTLDs and should not be allowed until the IDN ccPDP process concluded. <http://forum.icann.org/lists/gtld-evaluation/msg00015.html>
- On 12 February 2009, the Board met to discuss: (1) proposed changes to Version 1; and (2) the implementation of policy recommendations given by the GAC and GNSO. <http://www.icann.org/en/minutes/minutes-12feb09.htm>
- On 18 February 2009, ICANN published an analysis of public comments received <http://www.icann.org/en/topics/new-gtlds/agv1-analysis-public-comments-18feb09-en.pdf>
- Also on 18 February 2009, ICANN published Version 2 of the new gTLD Applicant Guidebook (“Version 2”), which clarified the definition of geographic names set forth in Version 1. In addition, Version 2 expanded protection for country and territory names involving meaningful representations in any language, and augmented requirements for documentation of support or non-objection from relevant governments and public authorities. <http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-18feb09-en.pdf>; <http://www.icann.org/en/topics/new-gtlds/comments-2-en.htm>
- On 6 March 2009, the Board resolved that it was generally in agreement with Version 2 as it related to geographic names, but directed staff to revise the relevant portions of Version 2 to provide greater specificity on the scope of protection at the top level for the

names of countries and territories listed in the ISO 3166-1 standard. The Board also directed ICANN staff to send a letter to the GAC by 17 March 2009 identifying implementation issues that have been identified in association with the GAC's advice, in order to continue communications with the GAC to find a mutually acceptable solution.

<http://www.icann.org/en/minutes/resolutions-06mar09.htm>

- On 17 March 2009, Paul Twomey delivered a letter to Janis Karklins that: (1) outlined the Board's 6 March 2009 resolution; (2) stated that ICANN's treatment of geographic names provided a workable compromise between the GAC Principles and GNSO policy recommendations; and (3) sought advice to resolve implementation issues regarding the protection of geographic names at the second level. <http://www.icann.org/correspondence/twomey-to-karklins-17mar09-en.pdf>
- On 9 April 2009, the ccNSO commented on Version 2. The ccNSO reiterated that all country and territory names are ccTLDs – not gTLDs. <http://forum.icann.org/lists/2gtld-guide/pdfc3uGsuV7CG.pdf>
- On 24 April 2009, Janis Karklins delivered a letter to Paul Twomey stating that: (1) countries should not have to use objection process and should instead wait for the IDN ccTLD PDP to delegate country names; (2) the names contained on three lists be reserved at the second level at no cost for the government; and (3) ICANN should notify registries and request the suspension of any name if the government notifies ICANN that there was a misuse of a second level domain name. <http://www.icann.org/correspondence/karklins-to-twomey-24apr09.pdf>
- On 29 May 2009, Janis Karklins delivered a letter to Paul Twomey. The letter that stated that: (1) the proposed changes to Version 2 in relation to geographic names at the second level were acceptable to the GNSO; and (2) the GNSO and the GAC were not in agreement with regard to other issues relating to Geographic names at the top level. <http://www.icann.org/correspondence/karklins-to-twomey-29may09-en.pdf>

- On 31 May, 2009, ICANN published an analysis of the public comments received concerning draft version 2 of the Applicant Guidebook.
<http://www.icann.org/en/topics/new-gtlds/agv2-analysis-public-comments-31may09-en.pdf>
- On 26 June 2009, the Board discussed proposed changes to the geographic names section of the Applicant Guidebook. These proposed changes were intended to provide greater specificity on the scope of protection at the top level for the names of countries and territories and greater specificity in the support requirements for continent or region names. The changes also provided additional guidance to applicants for determining the relevant government or public authority for the purpose of obtaining the required documentation.
<http://www.icann.org/en/minutes/resolutions-26jun09.htm>
- On 18 August 2009, Janis Karklins delivered a letter to Peter Dengate Thrush that stated that (1) strings that were a meaningful representation or abbreviation of a country name or territory name should not be allowed in the gTLD space; and (2) government or public authority should be able to initiate the redelegation process in limited circumstances.
<http://www.icann.org/correspondence/karklins-to-dengate-thrush-18aug09-en.pdf>
- On 22 September 2009, Peter Dengate-Thrush delivered a letter to Janis Karklins, responding to GAC comments on draft version 2 of the Applicant Guidebook and describing the rationale for the proposed treatment of country names, as well as the Board's general intention to provide clear rules for applicants where possible with reference to lists.
<http://www.icann.org/correspondence/dengate-thrush-to-karklins-22sep09-en.pdf>
- On 04 October 2009, ICANN published Version 3 of the new gTLD Applicant Guidebook ("Version 3").
<http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-04oct09-en.pdf>
- On 21 November 2009, ccNSO delivered a letter to the Board, raising concerns about the treatment of country and territory

names. ccNSO also submitted these comments via public comments. <http://www.icann.org/correspondence/dispain-to-dengate-thrush-21nov09-en.pdf>

- On 15 February 2010, ICANN published an analysis of the public comments received. <http://www.icann.org/en/topics/new-gtlds/summary-analysis-agv3-15feb10-en.pdf>
- On 12 March 2010, the Board resolved that ICANN should consider whether the Registry Restrictions Dispute Resolution Procedure or a similar post-delegation dispute resolution procedure could be implemented for use by government supported TLD operators where the government withdraws its support of the TLD. <http://www.icann.org/en/minutes/resolutions-12mar10-en.htm>
- On 31 May 2010, ICANN published Version 4 of the new gTLD Applicant Guidebook (“Version 4”). Version 4 excluded country and territory names from the first gTLD application round, continuing with the existing definition of country and territory names in Version 3. <http://www.icann.org/en/topics/new-gtlds/comments-4-en.htm>
- On 23 September 2010, Heather Dryden delivered a letter to Peter Dengate Thrush that stated that that Version 4 still did not take fully into consideration GAC’s concerns regarding the definition of country/territory names. <http://www.icann.org/en/correspondence/dryden-to-dengate-thrush-23sep10-en.pdf>
- On 25 September 2010, the Board met in Trondheim, Norway and decided: (1) not to include translations of the ISO 3166-1 sub-national place names in the Applicant Guidebook, and (2) to augment the definition of Continent or UN Regions in the Applicant Guidebook to include UNESCO’s regional classification list. At the same meeting, the Board resolved that ICANN staff should determine if the directions indicated by the Board regarding geographical names and other issues are consistent with GAC comments, and recommend any appropriate further action in light of GAC’s comments. <http://icann.org/en/minutes/resolutions-25sep10-en.htm>

- On 28 October, 2010, the Board discussed the scope, timing and logistics of a consultation needed with GAC regarding remaining geographic names issues in the new gTLD program. The Board agreed that staff should provide a paper on geographic names to GAC. <http://www.icann.org/en/minutes/prelim-report-28oct10-en.htm>
- On 12 November 2010, ICANN posted the proposed final version of the Applicant Guidebook (the “Proposed Final Guidebook”). <http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-12nov10-en.pdf>
- On 23 February 2011, the GAC released its Indicative Scorecard on New gTLD Outstanding Issues. This scorecard included advice from the GAC on the topics of Post-Delegation Disputes and Use of Geographic Names. http://gac.icann.org/system/files/20110223_Scorecard_GAC_outstanding_issues_20110223.pdf
- On 28 February – 1 March 2011, the Board met with GAC representatives at a meeting in Brussels to discuss the issues raised by the GAC.
- On 4 March 2011, the Board published its notes on the GAC Indicative Scorecard. The Board provided an indication of whether each component of the GAC’s advice was consistent (fully or partially) or inconsistent with the Board’s position on each of the issues. <http://gac.icann.org/system/files/2011-03-04-ICANN-Board-Notes-Actionable-GAC-Scorecard.pdf>
- On 12 April 2011, the GAC published comments on the Board’s response to the GAC Scorecard. http://gac.icann.org/system/files/20110412_GAC_comments_on_the_Board_response_to_the_GAC_scorecard_0.pdf
- On 15 April 2011, ICANN posted a discussion draft of the Applicant Guidebook (the “Discussion Draft Guidebook”). This version expanded the definition of country names to include “a name by which a country is commonly known, as demonstrated by evidence that the country is recognized by that name by an intergovernmental or treaty organization” as well as providing clarification to applicants that in the event of a dispute between a

government (or public authority) and a registry operator that submitted documentation of support from that government or public authority, ICANN will comply with a legally binding order from a court in the jurisdiction of the government or public authority that has given support to an application.

<http://www.icann.org/en/topics/new-gtlds/draft-rfp-redline-15apr11-en.pdf>

- On 26 May 2011, the GAC provided comments on the 15 April 2011 Discussion Draft.
<http://gac.icann.org/system/files/GAC%20Comments%20on%20the%20new%20gTLDs%20-%2026%20May%202011.pdf>
- On 30 May 2011, ICANN posted another version of the Applicant Guidebook, taking into account public comment and the additional comment from the GAC. This version includes some clarifications but no significant changes from the 15 April 2011 Discussion Draft.
<http://icann.org/en/topics/new-gtlds/comments-7-en.htm>

III. The Board’s Analysis of Geographic Names Associated with the gTLD Program

A. Brief Introduction to Geographic Names

This section sets forth an overview of the treatment of geographic names in the Applicant Guidebook.

- Section 2.2.1.4 provides the following guidance for applications involving geographic names.
 - Applications for gTLD strings must ensure that appropriate consideration is given to the interests of governments or public authorities in geographic names.
 - Certain types of applied-for strings are considered geographical names and must be accompanied by documentation of support or non-objection from the relevant governments or public authorities. These include:

- An application for any string that is a representation, in any language, of the capital city name of any country or territory listed in the ISO 3166-1 standard;
 - An application for a city name, where the applicant declares that it intends to use the gTLD for purposes associated with the city name;
 - An application for any string that is an exact match of a sub-national place name, such as a county, province, or state, listed in the ISO 3166-2 standard; and
 - An application for a string which represents a continent or UN region appearing on the “Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings” list.
- Applications for strings that are country or territory names will not be approved, as they are not available under the new gTLD program in this application round.
 - The requirement to include documentation of support for certain applications does not preclude or exempt applications from being the subject of objections on community grounds, under which applications may be rejected based on objections showing substantial opposition from the targeted community.
- Section 2.3.1 of the Draft Discussion Guidebook provides additional guidance:
 - If an application has been identified as a geographic name requiring government support, but the applicant has not provided sufficient evidence of support or non-objection from all relevant governments or public authorities by the end of the initial evaluation period, the applicant will have additional time to obtain and submit this information in the extended evaluation period.

B. Why the Board Addressed Geographic Names

- The treatment of geographic names in the new gTLD space was an area of significant concern to many stakeholders.
- The Board received extensive advice from the GAC regarding the protection of geographic names.
- The GNSO, in its policy development work, balanced a number of stakeholder considerations in the formation of advice on the treatment of geographic names.
- The Board recognized that government stakeholders have important interests in protecting certain geographic names.
- The Board wished to create an appropriate balance between the interests of governments in protecting certain geographic names, and the multiple uses possible for various types of names in the namespace.

C. Who the Board Consulted

- Legal Counsel
- The GNSO
- The GAC
- The ALAC
- The ccNSO
- The SSAC
- All other Stakeholders and Community members through public comment forum and other methods of participation.

D. What Significant Non-Privileged Materials the Board Reviewed

- **Communications from GAC**

- On 28 March 2007, GAC adopted the GAC Principles
http://gac.icann.org/system/files/gTLD_principles_0.pdf
- On 31 October 2007, GAC issued a communiqué
<http://gac.icann.org/communiqués/gac-2007-communique-30>
- On 26 June 2008, GAC expressed concern to Board and GNSO that the GNSO proposals do not include provisions reflecting GAC Principles regarding new gTLDs
<http://www.icann.org/en/minutes/resolutions-26jun08.htm>
- On 8 September 2008, Paul Twomey participated in a conference call with the GAC to discuss treatment of GAC Principles
- On 2 October 2008, Paul Twomey delivered a letter to Janis Karklins
<http://www.icann.org/en/correspondence/twomey-to-karklins-02oct08.pdf>
- On 8 November 2008: GAC issued a communiqué
<http://gac.icann.org/communiqués/gac-2008-communique-33>
- On 4 March 2009, GAC issued a communiqué
<http://gac.icann.org/communiqués/gac-2009-communique-34>
- On 17 March 2009, Paul Twomey delivered a letter to Janis Karklins
<http://www.icann.org/correspondence/twomey-to-karklins-17mar09-en.pdf>
- On 24 April 2009, Janis Karklins delivered a letter to Paul Twomey
<http://www.icann.org/correspondence/karklins-to-twomey-24apr09.pdf>

- On 29 May 2009, Janis Karklins delivered a letter to Paul Twomey
<http://www.icann.org/correspondence/karklins-to-twomey-29may09-en.pdf>
 - On 24 June 2009, GAC issued a communiqué
<http://gac.icann.org/communiques/gac-2010-communique-38>
 - On 18 August 2009, Janis Karklins delivered a letter to Peter Dengate
<http://www.icann.org/correspondence/karklins-to-dengate-thrush-18aug09-en.pdf>
 - On 22 September 2009, Peter Dengate-Thrush delivered a letter to Janis Karklins
<http://www.icann.org/correspondence/dengate-thrush-to-karklins-22sep09-en.pdf>
 - On 10 March 2010, Janis Karklins delivered a letter to Peter Dengate-Thrush
<http://www.icann.org/correspondence/karklins-to-dengate-thrush-10mar10-en.pdf>
 - On 23 September 2010, Heather Dryden delivered a letter to Peter Dengate-Thrush
<http://www.icann.org/en/correspondence/dryden-to-dengate-thrush-23sep10-en.pdf>
- On 23 February 2011, the GAC delivered its Indicative Scorecard on New gTLD Outstanding Issues
http://gac.icann.org/system/files/20110223_Scorecard_GAC_outstanding_issues_20110223.pdf

- **GNSO Policy Recommendations**

- On 23 May 2007, GNSO Reserved Names Working Group issued its final report

<http://gns0.icann.org/issues/new-gtlds/final-report-rn-wg-23may07.htm>

- On 8 August 2007, GNSO issued its final report regarding the introduction of new gTLDs
<http://GNSO.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>

- **ccNSO Comments**

- On 28 December 2008, ccNSO commented on Version 1
<http://forum.icann.org/lists/gtld-evaluation/msg00015.html>
- On 9 April 2009, ccNSO commented on Version 2
<http://forum.icann.org/lists/2gtld-guide/pdfc3uGsuV7CG.pdf>
- On 6 July 2009, ccNSO commented on an excerpt from Version 3
<http://forum.icann.org/lists/e-gtld-evaluation/msg00006.html>
- On 21 November 2009, ccNSO commented on Version 3 again <http://www.icann.org/correspondence/disspain-to-dengate-thrush-21nov09-en.pdf>

- **Public Comments**

- Comments from the community
<http://www.icann.org/en/topics/new-gtlds/comments-analysis-en.htm>

E. What Concerns the Community Raised

- There is a need for clarification of the geographic names process in the Application Guidebook.
- The new gTLDs should respect the sensitivity regarding terms with national, cultural, geographic and religious significance.

- The enumerated grounds for objection might not provide sufficient grounds to safeguard the interest of national, local and municipal governments in the preservation of geographic names that apply to them.
- Delegation and registration of country and territory names is a matter of national sovereignty.
- There is concern over the fees involved in the dispute resolution process, particularly for governments.
- There is concern over perceived inconsistencies with the GNSO policy recommendations.

F. What Factors the Board Found to Be Significant

- The balance of retaining certainty for applicants and demonstrating flexibility in finding solutions;
- The goals of providing greater clarity for applicants and appropriate safeguards for governments and the broad community;
- The goal of providing greater protections for country and territory names, and greater specificity in the support requirements for the other geographic names;
- The goal of respecting the relevant government or public authority's sovereign rights and interests;
- The risk of causing confusion for potential applicants and others in the user community; and
- The risk of possible misuse of a country or territory name or the misappropriation of a community label.

G. The Board's Reasons For the Proposed Approach to Geographic Names

- ICANN's Core Values include introducing and promoting competition in the registration of domain names where practicable and beneficial in the public interest.

- The Board has accepted GAC advice to require government approval in the case of applications for certain geographic names.
- The Board intended to create a predictable, repeatable process for the evaluation of gTLD applications. Thus, to the extent possible, geographic names are defined with respect to pre-existing lists.
- The Board recognized that the community objection process recommended by the GNSO to address misappropriation of a community label would be an additional avenue available to governments to pursue a case where a name was not protected by reference to a list. The Board discussed this topic extensively with the GAC. As a result of the consultation on this and other topics, the Applicant Guidebook was revised to incorporate an Early Warning process which governments could use to flag concerns about a gTLD application at an early stage of the process. These procedures could also help address any concerns from governments about geographic names not already protected in the process.
- The Board also confirmed that the GAC has the ability to provide GAC Advice on New gTLDs concerning any application. Thus, governments would not be required to file objections and participate in the dispute resolution process, but rather, may raise their concerns via the GAC. This process could be used, for example, for governments to object to an application for a string considered by a government to be a geographic name.
- The formal objection and dispute resolution process does remain available to governments as an additional form of protection. Limited funding support from ICANN for objection filing fees and dispute resolution costs is available to governments.
- The Board adopted GAC recommendations for protections of geographic names in second-level registrations.

5. ICANN Board Rationale on the Risk of Increased Malicious Conduct Associated with the New gTLD Program

5. ICANN Board Rationale on the Risk of Increased Malicious Conduct Associated with the New gTLD Program

I. Introduction

Through the development of the new gTLD program and the numerous opportunities for public comment and receipt of community input on the new gTLD program, one of the issues that emerged as a commonly-raised concern was the potential for an increased risk of instances of malicious conduct associated with the introduction of New gTLDs. ICANN committed to (and remains committed to) addressing this issue. The Affirmation of Commitments of the United States Department of Commerce and ICANN includes the following provision:

ICANN will ensure that as it contemplates expanding the top-level domain space, the various issues that are involved (including competition, consumer protection, security, stability and resiliency, malicious abuse issues, sovereignty concerns, and rights protection) will be adequately addressed prior to implementation.

<http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm>. These issues were not newly identified in the Affirmation of Commitments. From the outset, ICANN has sought to address these issues as it has prepared to implement the new gTLD program, and has mechanisms and processes designed to address this concern.

This memorandum focuses on the Board's consideration of the risk of a potential increase in malicious conduct associated with the introduction of new gTLDs. The memorandum summarizes: the Board's consideration of the issue, measures approved to mitigate instances of malicious conduct, and the Board's rationale for implementing the new gTLD program while adopting and implementing measures to mitigate that risk.

II. History of the Board's Consideration of Malicious Conduct

This section contains a brief history of significant actions taken by the ICANN Board to mitigate the potential for malicious conduct associated with the new gTLD program.

- On 26 June 2008, the Board adopted the Generic Names Supporting Organization's ("GNSO") policy recommendations for the introduction of new gTLDs, and directed ICANN staff to continue to develop a detailed implementation plan.
See Board Resolution at http://www.icann.org/en/minutes/resolutions-26jun08.htm#_Toc76113171; see Board Meeting Transcript at https://par.icann.org/files/paris/ParisBoardMeeting_26June08.txt
- On 16 May 2009, the Board participated in a workshop on issues related to the new gTLD program, including the security and stability of the Internet generally and the potential risk of malicious conduct in particular. [Rationale-all -final-20110609.doc](#)
- On 20 June 2009, the Board participated in another workshop on issues related to the new gTLD program, including the risk of malicious conduct on the Internet.
- On 26 June 2009, the Board resolved that new gTLDs be prohibited from using Domain Name System ("DNS") redirection and synthesized DNS responses; directed ICANN staff to amend the draft Applicant Guidebook accordingly; and further directed ICANN staff to educate the community about the harms associated with DNS redirection and synthesized DNS responses and how to stop them.
See Board Resolution at <https://icann.org/en/minutes/resolutions-26jun09.htm>; see Board Meeting Transcript at <http://syd.icann.org/files/meetings/sydney2009/transcript-board-meeting-26jun09-en.txt>
- During its study of malicious conduct, ICANN staff solicited and received comments from multiple outside sources, including the Anti Phishing Working Group (APWG), Registry Internet Safety Group (RISG), the Security and Stability Advisory Committee (SSAC), Computer Emergency Response Teams (CERTs) and members of the banking/financial and Internet security communities. These parties described several potential malicious conduct issues and encouraged ICANN to consider ways these might be addressed or mitigated in new gTLD registry agreements.
- On 1 October 2009, ICANN announced the launch of the Expedited Registry Security Request ("ERSR") process. ICANN intends that

gTLD registries will use the ERSR process for security incidents that require immediate action by the registry in order to avoid adverse effects upon DNS stability or security. The ERSR, a web-based submission procedure, reflects the result of a collaborative effort between ICANN and existing gTLD registries to develop a process for quick action in cases where gTLD registries: (1) inform ICANN of a present or imminent security threat to their TLD and/or the DNS; and (2) request a contractual waiver for actions they may take or already have taken to mitigate or eliminate the threat.

<http://www.icann.org/en/announcements/announcement-01oct09-en.htm>

- On 3 October 2009, ICANN published an Explanatory Memorandum on Mitigating Malicious Conduct, part of a series of documents published by ICANN to assist the global Internet community in understanding the development of the new gTLD program and the requirements and processes presented in the Applicant Guidebook. <https://icann.org/en/topics/new-gtlds/mitigating-malicious-conduct-04oct09-en.pdf>
- On 24 November 2009, ICANN announced that it was soliciting members for two new temporary expert advisory groups to study issues related to the risk of malicious conduct: (1) the establishment of a high security TLD designation; and (2) centralized zone access. <https://icann.org/en/announcements/announcement-03dec09-en.htm>
- On 3 December 2009, ICANN announced that it had formed the High Security Zone Advisory Group and the Centralized Zone File Access Advisory Group. <http://www.icann.org/en/announcements/announcement-03dec09-en.htm>
- On 22 February 2010, ICANN published papers by the High Security Zone Advisory Committee and the Central File Access Advisory Committee and solicited public comments. As the result of the latter paper, a uniform method of accessing registry data is now incorporated into the Guidebook. <http://www.icann.org/en/announcements/announcement-22feb10-en.htm>

- On 28 May 2010, ICANN published an Updated Explanatory Memorandum of Mitigating Malicious Conduct. The paper described specific malicious conduct mitigation measures that were recommended by recognized experts in this area that were subsequently incorporated into the Applicant Guidebook.
<http://www.icann.org/en/topics/new-gtlds/mitigating-malicious-conduct-memo-update-28may10-en.pdf>
- On 16 June 2010, ICANN solicited comments on the High Security Zone Advisory Committee's Policy Development Snapshot #2.
<http://www.icann.org/en/topics/new-gtlds/hstld-program-snapshot-2-16jun10-en.pdf>
- On 22 September 2010, ICANN published a Request for Information on the proposed High Security Zone program and requested that all submissions be made by 23 November 2010.
- On 23 September 2010, the GAC outlined to the Board its concerns and recommendations for the new gTLD program and its comments on version 4 of the Draft Applicant Guidebook.
<http://www.icann.org/en/correspondence/dryden-to-dengate-thrush-23sep10-en.pdf>
- On 24-25 September 2010, the Board participated in another workshop on issues related to the new gTLD program, including discussions on background screening, orphan glue records, and the High-Security Top-Level Domain (HSTLD) concept.
<http://www.icann.org/en/minutes/resolutions-25sep10-en.htm#2.8>
- On 12 November 2010, ICANN published a second Updated Explanatory Memorandum of Mitigating Malicious Conduct.
<https://icann.org/en/topics/new-gtlds/explanatory-memo-mitigating-malicious-conduct-12nov10-en.pdf>. This memo noted ICANN's adoption of the Zone File Access Advisory Group's [Strategy Proposal](#) for a recommendation to create a mechanism to support the centralization of access to zone-file records. This centralized approach is intended to streamline the access and approval process and standardize the format methodology for zone file consumers (e.g. anti-abuse and trademark protection organizations, researchers, academia, etc.). The Centralized Zone Data Access Provider pilot program was deployed for testing in June 2011 and a

production version program is anticipated to be deployed before any new gTLDs are delegated in the root. [Rationale-all -final-20110609.doc](#)

- On 9 December 2010, the GAC provided ICANN with a list of issues it considered to be “outstanding” and requiring further consideration, including consumer protection/the risk of malicious conduct.
http://gac.icann.org/system/files/Cartagena_Communique.pdf
- On 10 December 2010, the Board resolved that ICANN had addressed the issue of the risk of increased malicious conduct in new gTLDs by adopting and implementing various measures, including centralized zone file access. The Board further stated that these solutions reflected the negotiated position of the ICANN community, but that ICANN would continue to take into account public comment and the advice of the GAC.
See Board Resolution at <https://icann.org/en/minutes/resolutions-10dec10-en.htm>; see Board Meeting Minutes at <https://icann.org/en/minutes/minutes-10dec10-en.htm>
- On 21 February 2011, ICANN published a briefing paper on issues the GAC had identified as “outstanding” in September 2010, including certain issues related to the risk of increased malicious conduct.
<http://www.icann.org/en/announcements/announcement-6-21feb11-en.htm>
- On 28 February 2011 and 1 March 2011, the GAC and the Board conferred about remaining outstanding issues related to the new gTLD program, including certain issues related to the risk of increased malicious conduct.
<http://www.icann.org/en/announcements/announcement-23feb11-en.htm>
- On 4 March 2011, the Board published its comments on the GAC Scorecard.
<http://www.icann.org/en/topics/new-gtlds/board-notes-gac-scorecard-04mar11-en.pdf>
- On 15 April 2011, ICANN posted a discussion draft of the Applicant Guidebook (the “Discussion Draft Guidebook”).

<http://www.icann.org/en/topics/new-gtlds/draft-rfp-redline-15apr11-en.pdf>

- On 26 May 2011, the GAC provided comments on the 15 April 2011 Discussion Draft.
<http://gac.icann.org/system/files/GAC%20Comments%20on%20the%20new%20gTLDs%20-%2026%20May%202011.pdf>
- The GAC-Board discussions resulted in additional forms of background checks and requirements for new registries to cooperate with law enforcement.
- On 30 May 2011, ICANN posted another version of the Applicant Guidebook, taking into account public comment and the additional comment from the GAC.
<http://icann.org/en/topics/new-gtlds/comments-7-en.htm>

III. The Board's Analysis of the Risk of Increased Malicious Conduct Associated with the New gTLD Program

A. Why the Board is Addressing This Issue Now

- ICANN's mission statement and one of its founding principles is to promote competition. The expansion of TLDs will allow for more innovation and choice in the Internet's addressing system. The ICANN Board seeks to implement the new gTLD program together with measures designed to mitigate the risk of increased malicious conduct on the Internet.
- ICANN committed to the U.S. Department of Commerce that it would address the risk of malicious conduct in new gTLDs prior to implementing the program.
- The ICANN Board is committed to making decisions based on solid factual investigation and expert analysis.

B. Who the Board Consulted

- The GNSO
- The GAC
- The At-Large Community and ALAC

- The ICANN Implementation Recommendation Team (“IRT”)
- The Anti-Phishing Working Group
<http://www.antiphishing.org/>
- The Registry Internet Safety Group
<http://registrysafety.org/website/>
- The ICANN Security and Stability Advisory Committee
<http://www.icann.org/en/committees/security/>
- Computer Emergency Response Teams (“CERTs”)
See, e.g., <http://www.us-cert.gov/>
- The ICANN Zone File Access Advisory Group
<http://www.icann.org/en/topics/new-gtlds/zone-file-access-en.htm>
- The ICANN High Security Zone TLD Advisory Group
<http://www.icann.org/en/topics/new-gtlds/hstld-program-en.htm>
- The Registration Abuse Policies Working Group
<https://st.icann.org/reg-abuse-wg/>
- The Registrar Stakeholder Group
<http://www.icannregistrars.org/>
- The Registries Stakeholder Group
<http://www.gtldregistries.org/>
- Members of the banking and financial community, including the BITS Fraud Reduction Program, the American Bankers Association, the Financial Services Information Sharing and Analysis Center (“FS-ISAC”), and the Financial Services Technology Consortium (“FSTC”) See, e.g., www.icann.org/en/correspondence/bell-to-beckstrom-11aug09-en.pdf; and <http://www.icann.org/en/correspondence/evanoff-to-beckstrom-13nov09-en.pdf>
- Members of the Internet security community, including the Worldwide Forum of Incident Response and Security Teams (“FIRST”), which consists of computer and network emergency response teams from 180 corporations, government bodies,

universities and other institutions spread across the Americas, Asia, Europe, and Oceania; as well as various law enforcement agencies

- Other stakeholders and members of the community
- Legal counsel

C. What Significant Non-Privileged Materials the Board Reviewed

- Reports and Comments from Committees and Stakeholders
 - Centralized Zone File Access:
 - 18 February 2010 gTLD Zone File Access in the Presence of Large Numbers of TLDs: Concept Paper <https://icann.org/en/topics/new-gtlds/zfa-concept-paper-18feb10-en.pdf>
 - 12 May 2010 gTLD Zone File Access For the Future: Strategy Proposal <http://www.icann.org/en/topics/new-gtlds/zfa-strategy-paper-12may10-en.pdf>
 - Wild Card Resource Records:
 - 10 November 2006 ICANN Security and Stability Advisory Committee Paper: Why TLDs Should Not Use Wild Card Resource Records <http://www.icann.org/en/committees/security/sac015.htm>
 - Phishing Attacks:
 - 26 May 2008 ICANN Security and Stability Advisory Committee Paper: Registrar Impersonation Phishing Attacks <http://www.atlarge.icann.org/files/atlarge/ssac-registrar-impersonation-24jun08.pdf>
 - 17 June 2009 Anti-Phishing Working Group Paper https://st.icann.org/data/workspaces/new-gtld-overarching-issues/attachments/potential_for_malicious_conduct:

[20090619162304-0-3550/original/DRAFT%20Potential%20malicious%20us%20issues%2020090617.pdf](https://www.icann.org/files/paris/PiscitelloNXDOMAIN.20090619162304-0-3550/original/DRAFT%20Potential%20malicious%20us%20issues%2020090617.pdf)

- DNS Response Modification:
 - 20 June 2008 ICANN Security and Stability Advisory Committee Paper: DNS Response Modification
<https://par.icann.org/files/paris/PiscitelloNXDOMAIN.pdf>
- Centralized Malicious Conduct Point of Contact:
 - 25 February 2009 ICANN Security and Stability Advisory Committee Paper: Registrar Abuse Point of Contact
<http://www.icann.org/en/committees/security/sac038.pdf>
- High Security Zone:
 - 18 November 2009 A Model for High Security Zone Verification Program: Draft Concept Paper
<https://icann.org/en/topics/new-gtlds/high-security-zone-verification-04oct09-en.pdf>
 - 17 February 2010 High Security Zone TLD: Draft Program Development Snapshot
<https://icann.org/en/topics/new-gtlds/hstld-program-snapshot-18feb10-en.pdf>
 - 13 April 2010 High Security TLD: Draft Program Development Snapshot
https://st.icann.org/hstld-advisory/index.cgi?hstld_program_development_snapshot_1
 - 16 June 2010 High Security Zone TLD: Draft Program Development Snapshot
<http://www.icann.org/en/topics/new-gtlds/hstld-program-snapshot-2-16jun10-en.pdf>
- Redirection and Synthesized Responses:

- 10 June 2001 ICANN Security and Stability Advisory Committee Paper: Recommendation to Prohibit Use of Redirection and Synthesized Responses (*i.e.*, Wildcarding) by New TLDs
<http://www.icann.org/en/committees/security/sac041.pdf>
- Thick vs. Thin WHOIS:
 - 30 May 2009 ICANN Explanatory Memorandum on Thick vs. Thin WHOIS for New gTLDs
<http://www.icann.org/en/topics/new-gtlds/thick-thin-whois-30may09-en.pdf>
- Trademark Protection:
 - 29 May 2009 Implementation Recommendation Team Final Draft Report to ICANN Board
<http://www.icann.org/en/topics/new-gtlds/irt-final-report-trademark-protection-29may09-en.pdf>
 - See the Board Rationale Memorandum on Trademark Protection for a more detailed summary of non-privileged materials the Board reviewed on this topic.
- Malicious Conduct Generally:
 - 15 April 2009 ICANN Plan for Enhancing Internet Security, Stability and Resiliency
<http://www.icann.org/en/topics/ssr/ssr-draft-plan-16may09-en.pdf>
 - 19 May 2009 Registry Internet Safety Group's Paper: Potential for Malicious Conduct in New TLDs
https://st.icann.org/data/workspaces/new-gtld-overarching-issues/attachments/potential_for_malicious_conduct:20090519220555-0-2071/original/RISG_Statement_on_New_TLDs-20090519.pdf
 - 19 August 2009 ICANN Security and Stability Advisory Committee Paper: Measures to Protect Domain

Registration Services Against Exploitation or Misuse
<http://www.icann.org/en/committees/security/sac040.pdf>

- 3 October 2009 ICANN’s Explanatory Memorandum on Mitigating Malicious Conduct
<https://icann.org/en/topics/new-gtlds/mitigating-malicious-conduct-04oct09-en.pdf>
- 30 November 2009 Online Trust Alliance’s Comments on the New gTLD Program
<http://www.icann.org/en/correspondence/spiegle-to-pritz-30nov09-en.pdf>
- 28 May 2010 ICANN’s Updated Memorandum on Mitigating Malicious Conduct
<http://www.icann.org/en/topics/new-gtlds/mitigating-malicious-conduct-memo-update-28may10-en.pdf>
- 29 May 2010 Registration Abuse Policies Working Group Final Report
<http://www.gnso.icann.org/issues/rap/rap-wg-final-report-29may10-en.pdf>
- 13 September 2010 ICANN’s Updated Plan for Enhancing Internet Security, Stability and Resiliency
<http://icann.org/en/topics/ssr/ssr-draft-plan-fy11-13sep10-en.pdf>
- 12 November 2010 ICANN’s Second Updated Memorandum on Mitigating Malicious Conduct
<https://icann.org/en/topics/new-gtlds/explanatory-memo-mitigating-malicious-conduct-12nov10-en.pdf>
- 21 February 2011 ICANN briefing paper on issues the GAC had identified as “outstanding” in September 2010, including certain issues related to the risk of increased malicious conduct
<http://www.icann.org/en/announcements/announcement-6-21feb11-en.htm>

- Comments from the Community

D. What Concerns the Community Raised

- There was concern expressed that the new gTLD program will lead to an expansion of crime on the Internet, including look-alike domains, drop catching, domain tasting, domain hijacking, malware distribution, identity theft and miscellaneous deceptive practices.
- Wrongdoers may apply to operate registries.
- Wrongdoers may exploit technical weaknesses in the Internet, including automated registration services.
- End user confusion about new gTLDs may lead to increased fraud. For example, end users may be confused about TLDs whose mere names raise expectations of security.
- Certain new gTLDs may not comply with some national laws.
- There is a need for an enhanced control framework for TLDs with intrinsic potential for abuse, including those involving e-service transactions requiring a high confidence infrastructure (such as electronic financial services or electronic voting) and those involving critical assets (such as energy infrastructures or medical services).
- There is a need for better and more efficient identification of domain name resellers.
- There is a need to ensure the integrity and utility of registry information.
- The new gTLD program should safeguard the privacy of personal and confidential information.
- New gTLDs may adversely affect trademark owners.
- ICANN and others should better enforce provisions in agreements with registries and registrars.
- ICANN should impose new requirements on TLD operators.

- There is a need for systemic processes to combat abuse on the Internet.

E. What Steps the Board Resolved to Take to Mitigate Malicious Conduct

The Board believes the following measures will greatly help to mitigate the risk of increasing malicious conduct arising from new gTLDs. ICANN has incorporated the majority of these measures in the current version of the Applicant Guidebook and/or the registry agreement, and its efforts to implement the remaining measures are ongoing.

<http://www.icann.org/en/topics/new-gtlds/dag-en.htm>

- Required vetting of registry operators: The application process includes standardized, thorough background and reference checks for companies and individuals (key officers) to mitigate the risk that known felons, members of criminal organizations or those with histories of bad business operations (including cybersquatting) will become involved in registry operations or gain ownership or proxy control of registries.
- Required demonstrations of plans for Domain Name System Security Extensions (“DNSSEC”) deployment: DNSSEC is designed to protect the Internet from most attacks, including DNS cache poisoning. It is a set of extensions to the DNS which provide: (1) origin authentication of DNS data; (2) data integrity; and (3) authenticated denial of existence.
- Prohibition on wildcarding: The prohibition on wildcarding bans DNS redirection and synthesized DNS responses to reduce the risk of DNS redirection to a malicious site.
- Required removal of orphan glue records: Removal of orphan glue records destroys potential name server “safe havens” that abusers can use to support criminal domain registrations. Registry operators will be required to remove orphan glue records when presented with evidence in written form that such records are present in connection with malicious conduct.
- Mandatory thick WHOIS records: Registry Operators must maintain and provide public access to registration data using a thick WHOIS data model. Thick WHOIS will help mitigate malicious conduct and

trademark abuse by ensuring greater accessibility and improved stability of records.

- Centralization of zone file access: Central coordination of zone file data will allow the anti-abuse community to efficiently obtain updates on new domains as they are created within each zone, and to reduce the time necessary to take corrective action within TLDs experiencing malicious activity. The program is designed to reduce differences in and complexities of contractual agreements, standardize approaches and improve security and access methods.
- Mandatory documentation of registry level abuse contacts and procedures: Registry operators will provide a single abuse point of contact for all domains within the TLD who is responsible for addressing and providing timely responses to abuse complaints received from recognized parties, such as registries, registrars, law enforcement organizations and recognized members of the anti-abuse community. Registries also must provide a description of their policies to combat abuse.
- Required participation in the Expedited Registry Security Request (“ERSR”) process: ICANN developed the ERSR process in consultation with registries, registrars and security experts, based on lessons learned in responding to the Conficker worm, to provide a process for registries to inform ICANN of a present or imminent “security situation” involving a gTLD and to request a contractual waiver for actions the registry might take or has taken to mitigate or eliminate the security concerns. “Security situation” means: (1) malicious activity involving the DNS of a scale and severity that threatens the systematic security, stability and resiliency of the DNS; (2) potential or actual unauthorized disclosure, alteration, insertion or destruction of registry data, or the unauthorized access to or disclosure of information or resources on the Internet by systems operating in accordance with all applicable standards; or (3) potential or actual undesired consequences that may cause or threaten to cause a temporary or long-term failure of one or more of the critical functions of a gTLD registry as defined in ICANN’s gTLD Registry Continuity Plan.
- Framework for High Security Zones Verification: The concept of a voluntary verification program is a mechanism for TLDs that desire

to distinguish themselves as secure and trusted, by meeting additional requirements for establishing the accuracy of controls for the registry, registrar and registrant processing, as well as periodic independent audits. A draft framework was created by the HSTLD working group.. The working group’s Final Report may be used to inform further work. ICANN will support independent efforts toward developing voluntary high-security TLD designations, which may be available to gTLD applicants wishing to pursue such designations.

F. What Factors the Board Found to Be Significant

The Board considered numerous factors in its analysis of the potential for malicious conduct associated with the new gTLD program. The Board found the following factors to be significant:

- the principle that the Board should base Policy on solid factual investigation and expert analysis;
- whether new gTLDs would promote consumer welfare;
- certain measures intended to mitigate the risk of malicious conduct may raise implementation costs for new gTLD registries;
- the creation of new TLDs may provide an opportunity for ICANN to improve the quality of domain name registration and domain resolution services in a manner that limits opportunities for malicious conduct;
- most abuse takes place in larger registries because that is where abusive behavior “pays back,”; a more diverse gTLD landscape makes attacks less lucrative and effective;
- the risk of increasing exposure to litigation; and
- the lack of reported problems concerning increased criminal activity associated with ICANN’s previous introductions of new TLDs.

IV. The Board’s Reasons for Proceeding with the New gTLD Program While Implementing Measures to Mitigate the Risk of Malicious Conduct

- Modest additions to the root have demonstrated that additional TLDs can be added without adversely affecting the security and stability of the domain name system.
- ICANN’s “default” position should be for creating more competition as opposed to having rules that restrict the ability of Internet stakeholders to innovate. New gTLDs offer new and innovative opportunities to Internet stakeholders.
- Most abuse takes place in larger registries. A more diverse gTLD landscape makes attacks less lucrative and effective.
- New gTLD users might rely on search functions rather than typing a URL in an environment with many TLDs, lessening the effectiveness of forms of cyber-squatting.
- Brand owners might more easily create consumer awareness around their brands as a top-level name, reducing the effectiveness of phishing and other abuses.
- ICANN has worked with the community to address concerns relating to potential malicious conduct in the new gTLD space. New and ongoing work on these issues in the policy development arena may provide additional safeguards recommended as a result of the bottom-up process, and ICANN will continue to support these efforts.
- Data protection is best accomplished by data protection tools, including audits, contractual penalties such as contract termination, punitive damages, and costs of enforcement, as well as strong enforcement of rules.
- The measures adopted by ICANN, including centralized zone file access, and other mechanisms, address the principal concerns raised by stakeholders about the potential for proliferation of malicious conduct in the new gTLD space. A combination of verified security measures and the implementation of DNSSEC will

allow users to find and use more trusted DNS environments within the TLD market.

- Revised applicant procedures and agreements reflecting the measures to mitigate the risk of malicious conduct will permit ICANN to address certain risks of abuse contractually and also will permit ICANN to refer abuses to appropriate authorities. ICANN can amend contracts and the applicant guidebook to address harms that may arise as a direct or indirect result of the new gTLD program.

6. ICANN Board Rationale on Objection Process Associated with the New gTLD Program

6. ICANN Board Rationale on Objection Process Associated with the New gTLD Program

I. Introduction

Recommendation 12 of the Generic Names Supporting Organization (GNSO) Final Report on the Introduction of New gTLDs (<http://gnsso.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>), and approved by the Board in June 2008 (http://www.icann.org/en/minutes/resolutions-26jun08.htm#_Toc76113171) states that, “[D]ispute resolution and challenge processes must be established prior to the start of the process.” Further, Implementation Guideline H, also set forth by the GNSO, states “External dispute providers will give decisions on objections.”

Based on the GNSO Policy and implementation planning, it was determined that four of the GNSO recommendations should serve as a basis for an objection process managed by external providers. Those include the following:

- (i) Recommendation 2 “Strings must not be confusingly similar to an existing top-level domain or a Reserved Name” (String Confusion Objection);
- (ii) Recommendation 3 “Strings must not infringe the existing legal rights of others that are recognized or enforceable under generally accepted and internationally recognized principles of law” (Legal Rights Objection);
- (iii) Recommendation 6 “Strings must not be contrary to generally accepted legal norms relating to morality and public order that are recognized under international principles of law” (Limited Public Interest Objection); and
- (iv) Recommendation 20 “An application will be rejected if an expert panel determines that there is substantial opposition to it from a significant portion of the community to which the string may be explicitly or implicitly targeted” (Community Objection).

Thus, a process allowing third parties to object to applications for new gTLDs on each the four grounds stated above was developed.²

Subsequent to the development and refinement of the original Objection Procedures based on the GNSO recommendations and set out in Module 3 of the Applicant Guidebook (see <http://www.icann.org/en/topics/new-gtlds/objection-procedures-clean-30may11-en.pdf>) a separate process has been established for the GAC. That process is also set out in Module 3 of the Applicant Guidebook. In short, there is now a formal process for the GAC to provide advice in relation to the approval of an application.

II. History of the Development of the Objection Processes and Procedures Associated with the New gTLD Program

This section sets forth a history of significant actions taken on the subject of the objection process associated with the new gTLD program.

- In December 2005, the GNSO commenced a rigorous policy development process to determine whether (and the circumstances under which) new gTLDs would be added. A broad consensus was achieved that new gTLDs should be added to the root in order to further stimulate competition and for numerous other reasons.
- In August 2007, the GNSO issued its final report regarding the introduction of new gTLDs. Recommendation 12 of the report (“Recommendation 12”) states that “[d]ispute resolution and challenge processes . . . must be established prior to the start of the process” and Implementation Guideline H states that “External dispute providers will give decisions on objections.” <http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>
- In December 2007, ICANN posted a call for expressions of Interest from potential Dispute Resolution Service Providers (DSRP) for the new gTLD Program. <http://www.icann.org/en/announcements/announcement-21dec07.htm>

² The International Centre for Dispute Resolution (ICDR) has agreed to administer disputes brought pursuant to String Confusion Objections. The Arbitration and Mediation Center of the World Intellectual Property Organization (WIPO) has agreed to administer disputes brought pursuant to Legal Rights Objections. The International Center of Expertise of the International Chamber of Commerce (ICC) has agreed to administer disputes brought pursuant to Limited Public Interest and Community Objections.

- Throughout 2008, external dispute resolution service providers were evaluated and selected. As noted above in footnote 1, the ICDR will administer disputes brought pursuant to String Confusion Objections, WIPO will administer disputes brought pursuant to Legal Rights Objections and the ICC will administer disputes brought pursuant to Limited Public Interest and Community Objections.
- Also throughout 2008, ICANN conducted public consultations, as well as thorough and global research to help define the standing requirements and standards to be used by dispute resolution panels to resolve the disputes on the various Objection grounds.
- In October 2008, ICANN published draft version 1 of the Applicant Guidebook, including Module 3, which laid out the Dispute Resolution Procedures. At that same time, ICANN posted a paper for community discussion entitled “Morality and Public Order Objection Considerations in New gTLDs,” which summarized the implementation work that had been accomplished in response to Recommendation 6 (now called Limited Public Interest Objection).
<http://www.icann.org/en/topics/new-gtlds/morality-public-order-draft-29oct08-en.pdf>
- In February 2009, the Board discussed who would have standing to object to an applied-for string on the basis of morality and public order. There was a sense that an objection-based dispute resolution process was the appropriate method for addressing possible disputes. There was also a sense that any injured party would have standing to object. Limiting standing to governments or other official bodies might not address the potential harm.
<http://www.icann.org/en/minutes/minutes-12feb09.htm>
- Also in February 2009, with the second draft version of the Applicant Guidebook, ICANN posted the separate “New gTLD Dispute Resolution Procedure”. <http://www.icann.org/en/topics/new-gtlds/draft-dispute-resolution-procedure-18feb09-en.pdf>
- Also in February 2009, ICANN posted a paper for community discussion entitled “Description of Independent Objector for the New gTLD Dispute Resolution Process,” which explored the potential benefits of

allowing an “Independent Objector” to object within the dispute resolution process.

<http://www.icann.org/en/topics/new-gtlds/independent-objector-18feb09-en.pdf>

- In May 2009, along with revised excerpts of the Applicant Guidebook, ICANN posted a paper for community discussion entitled “Standards for Morality and Public Order Research,” which summarized the research relating to the development of standards for morality and public order (now Limited Public Interest) objections.
<http://www.icann.org/en/topics/new-gtlds/morality-public-order-30may09-en.pdf>
- In May 2010, ICANN posted a paper entitled “‘Quick Look’ Procedure for Morality and Public Order Objections,” which summarized a procedure requested by community members by which morality and public order objections could be dismissed if they are determined to be “manifestly unfounded and/or an abuse of the right to object.”
<http://www.icann.org/en/topics/new-gtlds/morality-public-order-quick-look-28may10-en.pdf>
- In August 2010, Heather Dryden, Chair of the GAC, delivered a letter to Peter Dengate Thrush, Chairman of the Board, requesting that the proposed procedure for morality and public order objections be replaced with an alternative mechanism.
<http://www.icann.org/en/correspondence/gac-to-dengate-thrush-04aug10-en.pdf>
- Also in August 2010, the Board considered Submission No. 2010-08-05-15, which discussed the feedback received by the GAC with regard to the proposed procedure for morality and public order objections.
<http://www.icann.org/en/minutes/board-briefing-materials-2-05aug10-en.pdf>
- In September 2010, the cross-stakeholder group known as the New gTLD Recommendation 6 Cross-Community Working Group (“Rec6 CWG”) published a report on the Implementation of the Recommendation (the “Rec6 CWG report”). The report provided guidance to the Board with regard to procedures for addressing culturally objectionable and/or sensitive strings, while protecting internationally recognized freedom of expression rights. This report

was posted for public comment. [See link at http://www.icann.org/en/announcements/announcement-2-22sep10-en.htm](http://www.icann.org/en/announcements/announcement-2-22sep10-en.htm)

- Also in September 2010, the Board met in Trondheim, Norway and stated that they would “accept the [Rec6 CWG] recommendations that are not inconsistent with the existing process, as this can be achieved before the opening of the first gTLD application round, and [would] work to resolve any inconsistencies.” At the same meeting, the Board agreed that it had “ultimate responsibility for the new gTLD program ... however, [that it wished] to rely on the determination of experts on these issues.”
<http://www.icann.org/en/minutes/resolutions-25sep10-en.htm>
- In October 2010, the Board again discussed the Rec6 CWG report, indicating that several of the working group recommendations could be included in the Guidebook for public discussion and that the working group recommendations should be discussed publicly at ICANN’s upcoming meeting in Cartagena.
<http://www.icann.org/en/minutes/resolutions-28oct10-en.htm>
- In November 2010, ICANN posted the proposed final version of the Applicant Guidebook (the “Proposed Final Guidebook”), which adopted several of the recommendations set forth in the Rec6 CWG report.
<http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-12nov10-en.pdf>
- Also in November 2010, ICANN posted an explanatory memorandum entitled “Limited Public Interest Objection,” which described the recommendations set forth in the Rec6 CWG report, ICANN’s responses to those recommendations and ICANN’s rationale for its responses.
<http://www.icann.org/en/topics/new-gtlds/explanatory-memorality-public-order-12nov10-en.pdf>
- In December 2010 in Cartagena, Columbia, the Board had two separate sessions with the Rec6 CWG to help achieve further understanding of the working group’s positions.
- On 23 February the GAC issued the “GAC indicative scorecard on new gTLD issues listed in the GAC Cartagena Communique” (“Scorecard”)

identifying the Objection Process as one of twelve areas for discussion.
<http://www.icann.org/en/topics/new-gtlds/gac-scorecard-23feb11-en.pdf>

- On 28 February and 1 March 2011, the Board and the GAC had a two-day consultation in Brussels, Belgium to discuss the issues raised in the Scorecard, including the suggestion that the GAC should not be subject to the Objection Procedures for Limited Public Interest Objections. Instead, a process was discussed by which the GAC could provide public policy advice on individual gTLD applications directly to the Board
- On 12 April 2011, the GAC issued “GAC comments on the ICANN’s Board’s response to the GAC Scorecard” that also addressed the Objection Procedures. <http://www.icann.org/en/topics/new-gtlds/gac-comments-board-response-gac-scorecard-12apr11-en.pdf>
- On April 15 2011, ICANN posted the April 2011 Discussion Draft of the Applicant Guidebook, containing a new “GAC Advice” section detailing the procedure by which the GAC could provide advice to the Board concerning gTLD applications. <http://www.icann.org/en/topics/new-gtlds/draft-dispute-resolution-procedures-redline-15apr11-en.pdf>
- Also on 15 April 2011, ICANN posted an Explanatory Memorandum entitled ‘GAC and Government Objections; Handling of Sensitive Strings; Early Warning’ to describe details of the new procedures. <http://www.icann.org/en/topics/new-gtlds/gac-objections-sensitive-strings-15apr11-en.pdf>
- [Also on 15 April 2011, ICANN posted](http://www.icann.org/en/topics/new-gtlds/board-notes-gac-scorecard-clean-15apr11-en.pdf) “Revised ICANN Notes on: the GAC New gTLDs Scorecard, and GAC Comments to Board Response” discussing its response to the GAC’s concerns on the Objection Process. <http://www.icann.org/en/topics/new-gtlds/board-notes-gac-scorecard-clean-15apr11-en.pdf>
- [On 20 May the Board and GAC had further consultations that included discussion on the Objection Process.](http://www.icann.org/en/topics/new-gtlds/transcript-board-gac-20may11-en.pdf) <http://www.icann.org/en/topics/new-gtlds/transcript-board-gac-20may11-en.pdf>

- [On 30 May, ICANN posted the current version of the Applicant Guidebook with additional refinements to the Objection Process as it relates to the GAC. http://www.icann.org/en/topics/new-gtlds/comments-7-en.htm](http://www.icann.org/en/topics/new-gtlds/comments-7-en.htm)
- [On 19 June 2011, the Board and the GAC had additional consultations.](#)

III. The Board’s Analysis of the Objection Process Associated with the New gTLD Program

A. Brief Introduction to the Objection Process

1. Brief Overview of the Objection Process for all except the GAC.

- The new gTLD process is an objection-based process, in which parties with standing may file with an identified independent dispute resolution provider a formal objection to an application on certain enumerated grounds (see footnote 1 for list of providers). The grounds for filing a formal objection to an application are:
 - the gTLD string is confusingly similar to an existing TLD or another applied-for gTLD string in the same round of applications (“String Confusion Objection”)
 - the gTLD string infringes the existing legal rights of the objector (“Legal Rights Objection”)
 - the gTLD string is contrary to generally accepted legal norms of morality and public order that are recognized under international principles of law (“Limited Public Interest Objection”)
 - there is substantial opposition to the application from a significant portion of the community to which the gTLD string may be explicitly or implicitly targeted (“Community Objection”).

<http://www.icann.org/en/topics/new-gtlds/draft-rfp-redline-15apr11-en.pdf>

- If the objectors have standing, their objections will be considered by a panel of qualified experts, that will issue a Determination.

- Specific standards under which each of the four types of objections will be evaluated are set forth in detail in Module 3 of the current Applicant Guidebook.
- There will be objection fees (fixed for String Confusion and Community Objections and hourly for Limited Public Interest and Community Objections) that will be refundable to the prevailing party.

2. Brief Overview of the GAC Advice Process.

- The process for GAC Advice on New gTLDs is intended to address applications that are identified by governments to be problematic, e.g., that potentially violate national law or raise sensitivities.
- For the Board to be able to consider the GAC advice during the evaluation process, the GAC advice would have to be submitted by the close of the Objection Filing Period
- Where GAC Advice on New gTLDs is received by the Board concerning an application, ICANN will publish the Advice and endeavor to notify the relevant applicant(s) promptly. The applicant will have a period of 21 calendar days from the publication date in which to submit a response to the ICANN Board.
- ICANN will consider the GAC Advice on New gTLDs as soon as practicable. The Board may consult with independent experts, such as those designated to hear objections in the New gTLD Dispute Resolution Procedure, in cases where the issues raised in the GAC advice are pertinent to one of the subject matter areas of the objection procedures.
- The receipt of GAC advice will not toll the processing of any application (i.e., an application will not be suspended but will continue through the stages of the application process).

B. Why the Board Addressed the Objection Process as it has

- The GNSO Policy Recommendations called for the creation of a dispute resolution or objection process in the new gTLD program.

- The GNSO also provided implementation guidelines suggesting that external dispute resolution providers should be utilized.
- A fully established objection process, with uniform standing requirements and standards available to the dispute resolution service providers, ensures that a reasonably objective process is in place. It further ensures that experts in dispute resolution make any determinations on the disputes after considering all of the evidence.
- A fully established dispute resolution process provides parties with a cost-effective alternative to initiating action in court, if there is a valid objection.
- The GAC advised the Board that it was not amendable to utilizing the standard Objection Process established for the new gTLD program. Accordingly, the Board worked closely with the GAC to develop a mutually acceptable “objection” mechanism, in the form of GAC Advice.

C. Who the Board Consulted

- Legal Counsel
- International arbitration experts
- Judges from various international tribunals such as the International Court of Justice
- Attorneys who practice in front of international tribunals such as the International Court of Justice
- The GNSO
- The GAC
- The ALAC
- The ccNSO
- The SSAC
- All other Stakeholders and Community Members

D. Significant Non-Privileged Materials the Board Reviewed

- GAC Principles Regarding New gTLDs.
http://gac.icann.org/system/files/gTLD_principles_0.pdf
- GNSO “Final Report – Introduction of new generic top-level domains.” <http://gnso.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>
- Report on Implementation of GNSO New GTLD Recommendation #6. See link to Report from <http://www.icann.org/en/announcements/announcement-2-22sep10-en.htm>
- All materials related to the Board/GAC consultation. See <http://www.icann.org/en/topics/new-gtlds/related-en.htm>
- All relevant GAC letters and Communiqués. See <http://www.icann.org/en/correspondence/> and <http://gac.icann.org/communiques>.
- Applicant Guidebook, related explanatory memoranda, other related documents and related comment summaries and analyses:
 - Each version of the Applicant Guidebook, including all ICANN created explanatory memoranda and the specific proposals for trademark protections, along with numerous pages of public comment summaries and analysis related to the Objection Procedures. See (i) <http://www.icann.org/en/topics/new-gtlds/comments-en.htm>; (ii) <http://www.icann.org/en/topics/new-gtlds/comments-2-en.htm#expmem>; (iii) <http://www.icann.org/en/topics/new-gtlds/comments-en.htm>; (iv) <http://www.icann.org/en/topics/new-gtlds/comments-3-en.htm>; (v) <http://www.icann.org/en/topics/new-gtlds/gnso-consultations-reports-en.htm>; (vi) <http://www.icann.org/en/announcements/announcement-4-15feb10-en.htm>; (vii) <http://www.icann.org/en/topics/new-gtlds/summaries-4-en.htm>; (viii) <http://www.icann.org/en/topics/new-gtlds/comments-5-en.htm>; (ix)

<http://www.icann.org/en/topics/new-gtlds/comments-analysis-en.htm>; (x) <http://www.icann.org/en/topics/new-gtlds/dag-en.htm>; (xi) <http://www.icann.org/en/topics/new-gtlds/comments-6-en.htm>; and (xii) <http://www.icann.org/en/topics/new-gtlds/comments-7-en.htm>

E. Significant Concerns the Community Raised

- What will be done if there is an application for a highly objectionable name, but there are no objectors within the process?
- There is a need for clarification on what type of string would be considered to be “contrary to generally accepted legal norms relating to morality and public order . . . recognized under international principles of law.”
- Are the standards set out for each objection appropriate?
- How will fees be determined?
- Will ICANN fund certain stakeholders’ objections?
- Should it be a dispute process rather than a mere objection process?
- Are the independent dispute resolution providers the rights ones to handle the specific objections?
- Neither Governments nor the GAC should be required to utilize the Objection Procedures.

F. Factors the Board Found to Be Significant

- The Dispute Resolution Process is designed to protect certain interests and rights, those interests identified by the GNSO in their policy recommendations that were approved by the ICANN Board.
- The Dispute Resolution Process will be more cost effective and efficient than judicial proceedings. Fees will be paid directly to the dispute resolution providers.

- The Dispute Resolution Process should be independent as possible so that the applicants, the community and ICANN have the benefit of neutral expert opinion.
- It is critical to address risk to the established processes and to ICANN by providing a path for considering controversial applications that might otherwise result in litigation or attacks to the process or to the ICANN model.
- Governments have a particular interest in having an unencumbered process to provide advice to the Board without having to utilize the formal independent objection process.

G. The Board’s Reasons for Supporting the Two-pronged Objection Process Established for the New gTLD Program

- The Dispute Resolution Process complies with the policy guidance provided by the GNSO.
- The Dispute Resolution Process provides a clear, predictable path for objections and objectors.
- The Dispute Resolution Process provides clear standards that will lead to predictable, consistent results.
- The Dispute Resolution Process provides for an independent analysis of a dispute.
- The Dispute Resolution Process provides a bright line between public comment and a formal objection process so parties understand the manner in which a challenge to a particular application should be brought (a lesson learned from previous rounds).
- The Dispute Resolution Process appropriately limits the role for the Board.
- The Dispute Resolution Process limits involvement to those who truly have a valid objection.
- The Dispute Resolution Process provides for a more efficient and cost effective approach to dispute resolution than judicial proceedings.

- The Dispute Resolution Process, which provide for an “Independent Objector” to object is an important step to achieving the goal of independence and ensuring the objectionable strings are challenged.
- The GAC Advice process provides an avenue for the GAC to provide public policy advice to the Board on individual applications in a relatively timely fashion and consistent manner.
- The GAC Advice process was developed after close consultations with the GAC and provides a prescribed manner and time frame in which the Board will be able to consider GAC advice with respect to a particular string or applicant.

7. ICANN Board Rationale on Root Zone Scaling in the New gTLD Program

7. ICANN Board Rationale on Root Zone Scaling in the New gTLD Program

I. Introduction

When ICANN was formed in 1998 as a not for profit, multi-stakeholder organization dedicated to coordinating the Internet's addressing system, its primary purpose was to promote competition in the domain name system ("DNS") marketplace while ensuring internet security and stability. ICANN's Bylaws and other foundational documents articulate that the promotion of competition in the registration of domain names is one of ICANN's core missions. See ICANN Bylaws, Article 1, Section 2.6.

One part of this mission is fostering competition by allowing additional Top Level Domains ("TLDs") to be created. ICANN began this process with the "proof of concept" round for a limited number of new gTLDs in 2000, and then permitted a limited number of additional "sponsored" TLDs in 2004-2005. These additions to the root demonstrated that TLDs could be added without adversely affecting the security and stability of the domain name system.

After an extensive policy development process, in August 2007, the GNSO issued a lengthy report in which it recommended that ICANN permit a significant expansion in the number of new gTLDs. The report recognized that the introduction of new gTLDs would require the expansion of the top-level DNS zone in the DNS hierarchy known as the DNS root zone ("root zone"). This expansion of the root zone, along with ICANN's recent and concurrent implementation of other changes to the root of the DNS, caused some members of the community to ask ICANN to review how the expansion of the root zone could impact root zone stability. <http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>.

Between 2004 and 2010, the root of the DNS underwent significant changes, both in content as well as support infrastructure. These changes included the addition of Internationalized Domain Names ("IDNs") to the root, the deployment of IPv6 and implementation of Domain Name System Security

Extensions (“DNSSEC”). The broad scope of these changes was unprecedented. Now with new gTLDs on the horizon, further substantive changes in the root of the DNS are expected.

In response to comments from members of the community, ICANN commissioned a number of studies to address the capacity and scaling of the root server system with the goal of ensuring the stable and secure addition of new gTLDs. The studies improved ICANN’s understanding of the scalability of the root zone as it pertains to new gTLDs, and they reinforced confidence in the technical capability and stability of the root zone at the projected expansion rates. The studies also helped to inform and improve ICANN’s approach to monitoring the scalability and stability of the root zone.

II. Brief History of ICANN’s Consideration of Root Zone Scaling Associated with the New gTLD Program

This section sets forth a brief history of significant Board actions on the subject of root zone scaling associated with the new gTLD program.

- In December 2005, the GNSO commenced a rigorous policy development process to determine whether (and the circumstances under which) new gTLDs would be added. A broad consensus was achieved that new gTLDs should be added to the root in order to further stimulate competition and for numerous other reasons.
- At the 2 November 2007 ICANN Board Meeting, the Board considered the GNSO’s policy recommendation and passed a resolution requesting that ICANN staff continue working on the implementation analysis for the introduction of the new gTLD program and report back to the Board with a report on implementation issues.
<http://gnso.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>; http://www.icann.org/minutes/resolutions-02nov06.htm#_Toc89933880

- On 6 February 2008, ICANN published a paper entitled DNS Stability: The Effect of New Generic Top Level Domains on the Internet Domain Name System which addressed TLD Strings, technical stability and the capacity of the root zone.

<http://www.icann.org/en/topics/dns-stability-draft-paper-06feb08.pdf>
- On 6 February 2008, in response to ICANN’s publication of the paper entitled DNS Stability: The Effect of New Generic Top Level Domains in the Internet Domain System, the Board requested public comments and community feedback regarding technical issues relevant to the addition of new gTLDs. The Board also requested guidance on how best to facilitate transparency in implementing the recommendations of the paper.

<http://www.icann.org/en/announcements/announcement-06feb08.htm>
- In February 2009, the Board resolved that the Security and Stability Advisory Committee (“SSAC”) and the DNS Root Server System Advisory Committee (“RSSAC”) should jointly conduct a study analyzing the aggregate impact of the proposed implementation of various changes to the root zone and any potential effects on the security and stability within the DNS root server system. These changes include the still-recent addition of IPv6 access to the root servers, the planned addition of IDNs at the root level, signing the root zone with DNSSEC, and the provisioning of new country code IDN TLDs and new gTLDs.
- On 7 September 2009, the Root Zone Scaling Team (“RSST”) released its study entitled Scaling the Root.

<http://www.icann.org/en/committees/dns-root/root-scaling-study-report-31aug09-en.pdf>
- On 17 September 2009, the DNS Operations Analysis and Research Center (“DNS-OARC”) released the “L” Root Study entitled Root Zone Augmentation and Impact Analysis.

<http://www.icann.org/en/topics/ssr/root-zone-augmentation-analysis-17sep09-en.pdf>

- On 29 September 2009, the Netherlands Organization for Applied Scientific Research (“TNO”) released a report directed by the RSST to develop a quantitative model of the DNS Root Server System to analyze the impact of the addition of new gTLDs, IDN TLDs, IPv6 and DNSSEC. That study is entitled Root Scaling Study: Description of the DNS Root Scaling Model. <http://www.icann.org/en/committees/dns-root/root-scaling-model-description-29sep09-en.pdf>
- On 14 October 2009, the Chair of the Internet Architecture Board (“IAB”), Olaf Kolkman, sent a letter to ICANN’s Board in response to the publication of the RSST Study. He stated that the report’s recommendations were accurate and that security, stability and resiliency are the most important properties of the system and they need to continue to be monitored and safeguarded by ICANN. <http://www.icann.org/en/correspondence/kolkman-to-ceo-board-14oct09-en.pdf>
- On 3 March 2010, ICANN released its Draft Delegation Rate Scenarios for New gTLDs, laying out the plan for limiting delegation rates and outlining expected demand for new gTLDs based on: (1) current participation in the new gTLD process; (2) brand and famous mark holders; and (3) regional, national and other geographic regions that are not currently participating. <http://www.icann.org/en/announcements/announcement-03mar10-en.htm>
- On 25 September 2010, the Board adopted a resolution approving a model and a rationale for the maximum rate of applications. It set the number at 1,000 applications per year. The Board noted that the initial survey of the root server operator’s ability to support growth was successful and directed ICANN staff to revisit that estimate on a regular basis. The Board directed ICANN to consult with root zone operators

to define, monitor and publish data on root zone stability.

<http://www.icann.org/en/minutes/resolutions-25sep10-en.htm#2.3>

- On 6 October 2010, ICANN released its Delegation Rate Scenarios for New gTLDs, laying out in final form the plan for limiting delegation rates for new gTLDs.
- On 5 November 2010, the ICANN Board received a letter from the Chair of ICANN's Board Risk Committee, Bruce Tonkin, stating that the Risk Committee is seeking advice from RSSAC on the capability of the root server system to support the planned introduction of new gTLDs in 2011/2012.
<http://www.icann.org/en/correspondence/tonkin-to-murai-05nov10-en.pdf>
- On 25 November 2010, the ICANN Board received a letter from the Chair of RSSAC, Jun Murai, stating that the recent successful implementation of DNSSEC in the root zone was a good example of how to proceed with new capabilities. He further stated that in the case of the proposed gradual expansion of no more than 1,000 new gTLD entries per year for the next several years, the RSSAC expected the system to remain stable and robust.
<http://www.icann.org/en/correspondence/murai-to-board-25nov10-en.pdf>
- On 10 December 2010, the Board indicated that the overarching issue of root zone scaling had been addressed through expert consultation and study. The studies indicate that rate-limited addition of TLDs can be implemented without any expected impact on the stability of the root zone system. The Board also agreed to implement communications and monitoring systems to oversee the new gTLD program.
<http://www.icann.org/en/minutes/minutes-10dec10-en.htm>

III. Major Root Zone Scaling Studies Commissioned by the Board

On 3 February 2009, the ICANN Board unanimously directed the RSSAC and SSAC to jointly study “the impact to security and stability within the DNS root server system of [the IPv6, IDN TLDs, DNSSEC and new gTLDs] proposed implementations.” The Board resolution stated that the joint studies should: (1) address the implications of the initial implementation of these changes occurring during a compressed time period; (2) address the capacity and scaling of the root server system to address a wide range of technical challenges and operational demands that might emerge as part of the implementation of proposed changes; and (3) ensure that the process for establishing the study terms, design and implementation will address technical and operational concerns regarding expanding the DNS root zone. <http://www.icann.org/en/minutes/minutes-03feb09.htm>.

In response to the Board’s 3 February 2009 Resolution, ICANN commissioned two studies. The “L” Root Study focused on the impact of the scaling of the root on one server. The RSST Study modeled the processes in the root management system and analyzed the results of scaling the system.

The studies made important observations about possible limits to the root system, including limits to the pace of scaling and limitations other than purely technical, e.g. in processing TLD applications through ICANN, NTIA and VeriSign. Neither study found meaningful technical limitations in system scaling. The RSST Study recommended ongoing system modeling and monitoring, and encouraged improved communication with ICANN staff on gTLD forecasts and plans. To follow up on the RSST Study, the TNO put together a modeling contribution in conjunction with the RSST Study to transform the information and findings in the RSST Study into a quantitative model and simulation software.

A. The “L” Root Study

The DNS-OARC released the “L” Root Study on 17 September 2009. The DNS-OARC conducted the study pursuant to a contract with ICANN. The study focused specifically on the impact of adding IPv6, DNSSEC and new TLDs to a laboratory simulation of the “L” Root Server. See

<http://www.icann.org/en/topics/ssr/root-zone-augmentation-analysis-17sep09-en.pdf>.

The DNS-OARC performed a number of simulations and measurements with BIND and NSD server software and varying zone sizes to better understand how the new gTLD program changes may affect the performance of, and resource requirements for, the root DNS server infrastructure. The analysis looked at five key areas that would have an impact on operations: (1) zone size; (2) name server reload and restart times; (3) DNS response latency; (4) inter-nameserver bandwidth utilization; and (5) potential increases in Transmission Control Protocol usage.

The “L” Root Study concluded that at least that one root server could easily handle both the deployment of the new technologies as well as the new gTLD program.

B. The RSST Study

The RSST released their study on 7 September 2009. It undertook to determine if, how, and to what extent “scaling the root” will affect the management and operation of the root system. The RSST Study considered the “L” Root Study as part of its input and outsourced the development of a simulation of root management processes and conducted interviews with root server operators, IANA staff, VeriSign, NTIA and others. The RSST Study reviewed the impact on the root servers, and on the provisioning systems that lead up to the root zone being propagated to the root servers. See <http://www.icann.org/en/topics/ssr/root-zone-augmentation-analysis-17sep09-en.pdf>.

The study provided qualitative and quantitative models of the root system that show how the root zone’s different parts are related and how the root zone responds to changes in the parameters that define its environment. The RSST Study’s conclusions assume that the estimate of less than 1,000 new gTLDs being added to the root zone per year is accurate. The study also assumes that other parameters relating to the management of the DNS root will not be substantively

altered. With these assumptions in mind, the RSST Study concluded that normal operational upgrade cycles and resource allocations will be sufficient to ensure that scaling the root, both in terms of new technologies as well as new content, will have no significant impact on the stability of the root system.

The principal results of the study are qualitative and quantitative models. These models enable the static simulation of popular “what-if” scenarios—*e.g.*, “what would happen if the size of the root zone increased by three orders of magnitude (assuming that everything in the system remained as it is today)?”—but also a far more useful dynamic analysis of the way in which the system responds and adapts to changes in the DNS environment over time. The analysis allows the community to anticipate the consequences of scaling the root, identify and recognize “early warning signs” of system stress, and plan ahead for any mitigating steps that may be necessary to keep the system running smoothly if and when signs of stress appear. The RSST Study also recommended that the Board call on ICANN’s staff to take on a monitoring role in collaboration with other system partners as an element of the new gTLD program rollout.

C. The TNO Report

To follow up on the RSST Study, the TNO put together a modeling contribution in conjunction with the RSST Study to transform the information and findings in the RSST Study into a quantitative model and simulation software. The TNO Report was able to simulate several cases for the purpose of model validation and to illustrate typical use of the simulation model. More specifically, this study was directed by the RSST to apply quantitative modeling expertise to develop a quantitative model of the DNS Root Server System to analyze ways it responds to the addition of new gTLDs, IDN TLDs, IPv6 and DNSSEC. The TNO suggested that the model be fine-tuned as the new gTLD program is implemented, and that the model be used as a tool by ICANN in order to give ICANN more accurate boundaries for the scalability of the root. See <http://www.icann.org/en/committees/dns-root/root-scaling-model-description-29sep09-en.pdf>.

IV. The Board’s Analysis of Root Zone Scaling

A. Why the Board Commissioned Studies on Root Zone Scaling

- ICANN’s mission statement and one of its founding principles is to promote user choice and competition. ICANN has created significant competition at the registrar level that has resulted in enormous benefits for consumers. To date, ICANN has not created meaningful competition at the registry level. Based upon the report and recommendation from the GNSO to introduce new gTLDs, the Board decided to proceed with the new gTLD program.
- Both the Board and members of the community have commented that the introduction of new gTLDs would require the expansion of the root zone and could impact root zone stability. To address these comments, on 3 February 2009, the Board adopted a resolution approving the SSAC/RSSAC Stability Studies which led to the commissioning of the “L” Root Study and RSST Study.

B. Who the Board Consult Regarding Root Zone Scaling

- Legal Counsel
- The GNSO
- The GAC
- DNS-OARC
- The SSAC
- The RSSAC
- The TNO

- All other Stakeholders and Community members through public comment forum and other methods of participation.

C. What Significant Non-Privileged Materials the Board Reviewed

In evaluating the issue of root zone scaling, the ICANN Board reviewed various materials to determine the stability of the root zone: (1) Deployment Experience; (2) Studies and Models; and (3) Public Comments.

1. Deployment Experience

In order to determine the stability of the root zone with the implementation of the new gTLD program, the Board closely evaluated the impact of the significant changes that had already been implemented or were in the process of being implemented into the root zone. Since February 2008, there have been significant additions to the root zone with the adoption and implementation of IDNs, IPv6 and DNSSEC. In fact, during the period between July 2004 when the first IPv6 addresses were added to the root zone for TLD name servers, until July 2010 when the root was DNSSEC-signed and Delegation Signer Records were inserted, the root DNS service continued with no reported or publicly visible degradation of service. The Board evaluated the impact of each individual addition to the root zone to date, and determined that the addition of IPv6 to the root system, IDN TLDs and the deployment of DNSSEC had no significant harmful effects that were observed by or reported to ICANN’s Board. Below is a timeline of the various additions to the root zone since July 2004:

Date	Technology	Event
July 2004	IPv6	First IPv6 addresses added to the root zone for top-level domains (KR and JP).
November 2005	DNSSEC	First top-level domain (.SE) signed.
June 2007	DNSSEC	IANA DNSSEC-signed root test bed made available.

August 2007	IDNs	Test IDN top-level domains added to the root.
February 2008	IPv6, gTLDs	First IPv6 addresses added for root servers (A, F, J, K, L and M). A limit of a maximum of less than 1,000 new gTLDs per year is derived from estimates of gTLD processing times.
January 2010	DNSSEC	Deliberately Unvalidatable Root Zone (DURZ) published on first root server ("L").
May 2010	IDNs, DNSSEC	First production IDNs added to the root (for Egypt, Saudi Arabia and United Arab Emirates). DURZ deployed on all 13 root servers.
June 2010	DNSSEC	First DS records are published in the root zone (for .UK and .BR).
July 2010	DNSSEC	Root is DNSSEC-signed and the root trust anchor is published.

<http://icann.org/en/topics/new-gtlds/summary-of-impact-root-zone-scaling-06oct10-en.pdf>

The deployment of new technologies continues without any significant impact to root zone stability. Deployment of IPv6 in the root, which began in 2004, caused no significant harmful effects. Insertion of IDNs into the root in 2007 similarly was a non-event from the perspective of stability of the DNS, and deployment of DNSSEC in the root starting in January 2010 resulted in no observable or reported negative consequences. The empirical data drawn from the deployment of these new technologies can be used to validate the observations. Furthermore, the Board looked at this data, and the continued stability of the root zone throughout the implementation of these programs, as a demonstration that the introduction of the new gTLD program at the proposed max rate of 1,000 applications per year would similarly not impact the stability of the root zone.

2. Studies and Models

As previously mentioned, the ICANN Board commissioned two studies in order to analyze any impact the new gTLD program might have on the root zone. Both of these studies took a different approach to evaluate the possible impact the new gTLD program might have on root zone stability. Along with the TNO Report, the studies concluded that if the proposed new gTLD program is implemented pursuant to the adopted model of a maximum of 1,000 applications per year, the program will have no significant impact on the stability of the root system.

3. Public Comments and the Board's Response

Throughout the Board's analysis of the new gTLD program, in particular with respect to its possible impact to root zone stability, the Board considered public comments made by individuals both in public comment forums and in direct response to the release of the two root zone stability studies. The universe of comments pertaining to root zone scaling is still available. See <http://forum.icann.org/lists/scaling/index.html>.

The ICANN Board's responses to those comments made in response to the RSST Study were published for the public. See <http://icann.org/en/committees/dns-root/summary-analysis-root-scaling-study-tor-04oct09-en.pdf>.

D. What Factors the Board Found to Be Significant

The Board considered numerous factors in its analysis of root zone scaling. The Board found the following factors to be significant:

- the principle that the Board should base its decision on solid factual investigation and expert consultation and study;
- the addition of new gTLDs to the root in order to stimulate competition at the registry level;
- the stable and secure addition of addition of new gTLDs to the DNS;

- the continued security, stability and resiliency of the root zone; and
- the continued monitoring of the root zone system.

V. The Board’s Reasons for Concluding the Introduction of New gTLDs Will Not Harm the Root Zone

The overarching issue of root zone scaling has been addressed through conversations with the public, expert consultation and expert analysis of the impact of the new gTLD program. These studies, consultations and interactions with the community facilitated the Board’s study of the possible impacts the introduction of new gTLDs may have on root zone stability. The Board concluded that the additional gTLDs may be delegated without any significant impact on the stability of the root zone system.

The Board will continue to closely monitor the stability of the root zone and will call on its staff to take on a monitoring regime along with other system partners as an element of the new gTLD program roll-out. Furthermore, the Board will ensure that ICANN staff and system partners establish effective communication channels with root zone operators and RSSAC to ensure a timely response to any changes in the root zone environment.

8. ICANN Board Rationale on String Similarity and String Contention Associated with the gTLD Program

8. ICANN Board Rationale on String Similarity and String Contention Associated with the gTLD Program

I. Introduction

Through the development of the new gTLD program, the Board has given consideration to issues of potential user confusion resulting from the delegation of many similar TLD strings, as well as to creating procedures for resolving contention cases (i.e., where there is more than one qualified applicant for a TLD).

The foundational policy guidance for the program contains the principle that strings likely to cause user confusion should be avoided. Additionally, policy guidance recommended that there should be a preference for community applications in contention situations.

This memorandum focuses on the Board's review of these issues in implementing these principles in the new gTLD program. The memorandum summarizes the Board's consideration of these issues, and the Board's rationale for implementing the new gTLD program with the provisions on string contention and string similarity.

II. Brief History of ICANN's Analysis of String Similarity and String Contention Associated With the gTLD Program

This section sets forth a brief history of significant actions on the subject of string contention associated with the new gTLD program.

- In December 2005, the GNSO commenced a rigorous policy development process to determine whether (and the circumstances under which) new gTLDs would be added. A broad consensus was achieved that new gTLDs should be added to the root in order to further stimulate competition and for other reasons.
- In February 2007, Bruce Tonkin sent an email to the GNSO Council, describing the type of contention resolution methods under discussion for the gTLD process, including self-resolution, among the parties, third-party mediation, a bidding process, auctions, and testing for community affiliations.

<http://forum.icann.org/lists/gtld-council/msg00358.html>;
<http://forum.icann.org/lists/gtld-council/msg00359.html>

- In March 2007, the Governmental Advisory Committee issued its GAC Principles regarding New gTLDs. This included: 2.4: In the interests of consumer confidence and security, new gTLDs should not be confusingly similar to existing TLDs. To avoid confusion with country-code Top Level Domains, no two letter gTLDs should be introduced.
http://gac.icann.org/system/files/gTLD_principles_0.pdf
- In August 2007, the GNSO issued its final report regarding the introduction of new gTLDs, including Recommendation 2, which stated that “strings must not be confusingly similar to an existing top-level domain or a Reserved Name.”
<http://gnso.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>
- The GNSO’s Final Report also included Implementation Guideline F, which stated: If there is contention for strings, applicants may: i) resolve contention between them within a pre-established timeframe; ii) if there is no mutual agreement, a claim to support a community by one party will be a reason to award priority to that application. If there is no such claim, and no mutual agreement a process will be put in place to enable efficient resolution of contention and; iii) the ICANN Board may be used to make a final decision, using advice from staff and expert panels.
- In March 2008, ICANN reported on preliminary work with SWORD to develop a potential algorithm that could help to automate the process for assessing similarity among proposed and existing TLD strings. <http://www.icann.org/en/minutes/prelim-report-27mar08.htm>
- On 26 June 2008, the Board adopted the Generic Names Supporting Organization’s (“GNSO”) policy recommendations for the introduction of new gTLDs, and directed ICANN staff to continue to develop a detailed implementation plan.
See Board Resolution at
<http://www.icann.org/en/minutes/resolutions->

[26jun08.htm# Toc76113171](#); see Board Meeting Transcript at https://par.icann.org/files/paris/ParisBoardMeeting_26June08.txt

- In August 2008, ICANN considered the use of auctions as a tie-breaking mechanism within the new gTLD process. <https://www.icann.org/en/topics/new-gtlds/program-updates-2008.htm>
- Also in August 2008, ICANN posted a paper for community discussion, entitled “The Economic Case for Auctions,” which explores the potential benefits of auctions as a tie-breaking mechanism. <https://www.icann.org/en/topics/economic-case-auctions-08aug08-en.pdf>
- Also in August 2008, ICANN considered the use of a string similarity algorithm to help automate the process for assessing similarity among the proposed and existing TLD strings. SWORD completed a beta algorithm and reviewed several test cases with ICANN staff to refine the parameters and discuss how the algorithm could be successfully integrated as a tool to help implement the GNSO's recommendation that new gTLD strings should not result in user confusion. <https://www.icann.org/en/topics/new-gtlds/program-updates-2008.htm>; <http://www.icann.org/en/announcements/announcement-08aug08-en.htm>
- In October 2008, the Board passed a resolution, authorizing the CEO, COO and/or General Counsel of ICANN to enter into an agreement for algorithm related services with SWORD. <https://www.icann.org/en/minutes/prelim-report-01oct08.htm>
- On 24 October 2008, ICANN published Version 1 of the new gTLD Applicant Guidebook (“Version 1”), as well as an explanatory memorandum, “Resolving String Contention,” <http://www.icann.org/en/topics/new-gtlds/string-contention-22oct08-en.pdf>, describing the reasons for the contention procedures found in the draft Guidebook. The Guidebook included a preliminary establishment of contention sets based on similarity between strings, opportunities for applicants to self-resolve such contention, a comparative evaluation process, and an objective

mechanism as a last resort.

<http://www.icann.org/en/topics/new-gtlds/draft-rfp-24oct08-en.pdf>

- These procedures have been continually revised, updated, and posted for comment through successive drafts of the Guidebook. In February 2009, auctions were identified as an objective mechanism of last resort for resolving string contention, included in an updated memorandum, <http://www.icann.org/en/topics/new-gtlds/string-contention-18feb09-en.pdf>, and beginning in draft version 2 of the Guidebook. <http://www.icann.org/en/topics/new-gtlds/draft-string-contention-clean-18feb09-en.pdf>
- Comments on successive drafts of the Guidebook expressed a desire for greater clarity around the standards to be used for comparative evaluation, including requests for examples of applications that would and would not meet the threshold. In response to these comments, ICANN developed detailed explanatory notes for each of the scoring criteria to give additional guidance to applicants. These were included beginning in draft version 3 of the Guidebook. <http://www.icann.org/en/topics/new-gtlds/draft-string-contention-clean-04oct09-en.pdf>
- In May 2010, ICANN issued draft version 4 of the Guidebook. The comparative evaluation was renamed the Community Priority Evaluation, to more accurately convey the purpose and nature of the evaluation (i.e., not comparing applicants to one another but comparing each against a common set of criteria). Version 4 also included definitions for terms used in the explanatory notes as well as clarifications and expanded guidance in several areas. <http://www.icann.org/en/topics/new-gtlds/comments-4-en.htm>
- In June 2010, the GNSO Council and the Registries Stakeholder Group requested that exceptions be granted from findings of confusing similarity. The reason for granting an exception would be that a string pair that was found to be confusingly similar constituted a case of "non-detrimental confusion." <http://gns0.icann.org/mailling-lists/archives/council/msg09379.html>; <http://forum.icann.org/lists/string-similarity->

[amendment/msg00002.html](#);
<http://www.icann.org/en/minutes/board-briefing-materials-1-25sep10-en.pdf>

- In September 2010, the Board discussed the subject of string similarity and resolved to encourage policy development as needed to consider any exceptions from findings of confusing similarity.
<http://www.icann.org/en/minutes/resolutions-25sep10-en.htm#2.4>
- On 30 May 2011, ICANN posted the Applicant Guidebook for consideration by the Board.
<http://www.icann.org/en/topics/new-gtlds/comments-7-en.htm>

III. The Board's Analysis of String Similarity and String Contention

A. Brief Introduction to String Similarity and String Contention

1. String Similarity

This section sets forth an overview of the string similarity determination:

- What is the Concern over String Similarity?
 - The Board determined that delegating highly similar TLDs in the new gTLD program created the threat of detrimental user confusion.
- How Is It Determined that String Similarity Exists?
 - The preliminary similarity review will be conducted by a panel of String Similarity Examiners, who will use the following standard to test for whether string confusion exists:

String confusion exists where a string so nearly resembles another visually that it is likely to deceive or cause confusion. For the likelihood of confusion to exist, it must be probable, not merely possible that confusion will arise in the mind of the average, reasonable Internet user. Mere association, in the sense that the string brings another string to mind, is insufficient to find a likelihood of confusion.

- The examination will be informed by human judgment assisted by criteria and an algorithmic score for the visual similarity between each applied-for string and each of other existing and applied-for TLDs. <http://icann.sword-group.com/algorithm/>
- What Happens Once the Determination is Made that String Similarity Exists?
 - In the simple case in which an applied-for TLD string is identical to an existing TLD, the application system will not allow the application to be submitted.
 - An application that fails the string confusion review and is found too similar to an existing TLD string will not pass the Initial Evaluation stage of the evaluation process, and no further reviews will be available.
 - An application that passes the string similarity review in the Initial Evaluation is still subject to challenge regarding string similarity in the current application round. That process requires that a specific string similarity objection be filed by an objector having the standing to make such an objection. Such category of objection is not limited to visual similarity. Rather, confusion based on any type of similarity may be claimed by an objector, visual, phonetic, and semantic similarity.
 - An application that passes the string similarity review and is not subject to a string confusion objection would proceed to the next relevant stage of the process.

2. String Contention

This section sets forth an overview of the string contention process:

- What is String Contention?
 - String contention is said to occur when the strings of two or more applications are identical or found to be so similar that delegation of both will create a threat of user confusion.
- What Components Are Involved in the String Contention Process?

- Identifying gTLD strings that are likely to deceive or cause user confusion in relation to either existing TLDs or reserved names or applied-for gTLDs; and
- Resolving the string contention.
- How is a Contention Set Identified?
 - In the initial evaluation of an applied for gTLD, a string similarity panel, using the procedures described above, will determine whether two or more applications for gTLDs are in direct string contention. The applications that are determined to be in direct string contention will be marked for later resolution of the contention and proceed to the subsequent process steps. Applications that are not part of a contention set can proceed to the next stage of the evaluation process without further action.
 - Applications are in direct string contention if their proposed strings are identical or so similar that string confusion would occur if both were to be delegated as TLDs. The determination is based on human judgment assisted by an algorithmic test performed on applications.
 - Two applications are in indirect string contention if they are both in direct string contention with a third application, but not with each other.
 - During the objection process, an applicant may file a string confusion objection to assert string confusion. If the objection is upheld by the panel adjudicating the objection, the applications will be deemed to be in a direct string contention and the relevant contention sets will be modified accordingly.
 - The final contention sets are established once the extended evaluation and objection process have been concluded, because some applications may be excluded in those steps.
- How is a Contention Set Resolved?

- Voluntary settlements or agreements can occur between applications that result in the withdrawal of one or more applications. These can occur at any stage of the process, once ICANN has posted the applications received. However, material changes to an application may require a re-evaluation.
- Community priority evaluation can be used only if at least one of the applications involved is community-based and has expressed a preference for community priority evaluation. A panel will receive and score the community-based applications against the established criteria for: (1) community establishment; (2) nexus between the proposed string and community; (3) dedicated registration policies; and (4) community endorsement. If one application is a “clear winner” (i.e., meets the community priority criteria), the application proceeds to the next step and its direct contenders are eliminated. If there is no “clear winner,” the contention set will be resolved through negotiation between the parties or auction. It may occur that more than one application meets the community priority criteria, in which case time will be allowed for resolving the remaining contention by either applicant withdrawing, otherwise an auction between those applicants will resolve the contention.
- A community application that prevails in a community priority evaluation eliminates all directly contending standard applications, regardless of how well qualified the latter may be. This is a fundamental reason for very stringent requirements for qualification of a community-based application, as embodied in the criteria. Arriving at the best outcome in a contention situation requires careful balancing of several variables, and this is the reason that a number of factors are included in the analysis.
- Auction is available as a last resort mechanism for resolving string contention when (1) contending applicants successfully complete all evaluations; (2) contending applicants elect not to use community priority evaluation, were not eligible for community priority evaluation, or

community priority evaluation did not provide a “clear winner”; and (3) contending applications have not resolved the contention among themselves.

B. Why The Board Addressed String Similarity and String Contention

- The new gTLD program will increase the number of domain names available, implying a risk that “confusingly” similar strings will appear.
- It is in the interests of consumer confidence and security to protect against the threat of user confusion and to avoid increasing opportunities for bad faith entities who wish to defraud users.
- Measures should be in place to protect internet users from the potential harm in delegating confusingly similar strings in the new gTLD program.
- The Board wants to create greater certainty in the domain name marketplace by crafting a fair and practical approach on how to identify and how best to resolve contention sets.
- The Board adopted the GNSO policy recommendations, including the implementation guideline implying that a community-based TLD application could be given a priority in cases of contention.

C. Who the Board Consulted

- Legal Counsel
- The GNSO
- The GAC
- The ALAC
- The ccNSO
- The SSAC
- All other Stakeholders and Community members through public comment forum and other methods of participation.

D. What Significant Non-Privileged Materials the Board Reviewed

- **GNSO Policy Recommendations**
 - Recommendation 2: Strings must not be confusingly similar to an existing top-level domain or a Reserved Name
<http://GNSO.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>
 - Implementation Guideline F: If there is contention for strings, applicants may:
 - i) resolve contention between them within a pre-established timeframe
 - ii) if there is no mutual agreement, a claim to support a community by one party will be a reason to award priority to that application. If there is no such claim, and no mutual agreement a process will be put in place to enable efficient resolution of contention and
 - iii) the ICANN Board may be used to make a final decision, using advice from staff and expert panels.
- **GAC Principles**
 - Recommendation 2.4: In the interests of consumer confidence and security, new gTLDs should not be confusingly similar to existing TLDs. To avoid confusion with country-code Top Level Domains, no two letter gTLDs should be introduced
http://gac.icann.org/system/files/gTLD_principles_0.pdf
- **Comments from the Community**
 - <http://www.icann.org/en/topics/new-gtlds/comments-analysis-en.htm>

E. What Concerns the Community Raised

- There is a need for clarification on the definition of “confusing similarity.”
- There are questions about the definitions for “standard” vs. “community-based” TLD types.
- There is a need for objective procedures and criteria for the community priority evaluation.

- A special form of resolution should be considered for a contention set involving two community-based applicants of equal strength, so that such a contention set is not required to go to auction.
- There is concern over using the auction process (and the receipt of auction proceeds) as a means to resolve contention for TLDs.
- There is concern that the string similarity algorithm only accounts for visual similarity, and does not accurately gauge the human reaction of confusion.
- Proceeds from auctions may be used for the benefit of the DNS and be spent through creation of a foundation that includes oversight by the community.

F. What Factors the Board Found to Be Significant

- There should be a consistent and predictable model for the resolution of contention among applicants for gTLD strings;
- The process should be kept as straightforward as possible to avoid unnecessary risks;
- There is potential harm in confusingly similar TLD strings that extends not only to the interests of existing TLD operators, but also to Internet users; and
- The protections set forth in the current string similarity process will safeguard both user and operator interests;

IV. The Board’s Reasons for Supporting the String Contention Process Contemplated in the new gTLD Program

- The Algorithm is a tool to aid the string similarity analysis.
 - The algorithm will be a consistent and predicable tool to inform the string confusion element of the new gTLD program. The algorithm will provide guidance to applicants and evaluators;
 - The role of the algorithm is primarily indicative; it is intended to provide informational data to the panel of examiners and expedite their review.

- The algorithm, user guidelines, and additional background information are available to applicants for testing and informational purposes
- Human judgment will be the determining factor in the final decisions regarding confusing similarity for all proposed strings.
- Contending applicants should be given the opportunity to settle contention among themselves – this will result in innovative and economic solutions.
- The community priority evaluation stage of the string contention process features sufficient criteria to: (a) validate the designation given to community-based applications; and (b) assess a preference for community-based applications in a contention set. Both the GNSO Final Report and GAC Principles encourage the special consideration of applications that are supported by communities.
 - <http://GNSO.icann.org/issues/new-gtlds/pdp-dec05-fr-part-08aug07.htm>;
 - http://gac.icann.org/system/files/gTLD_principles_0.pdf
- The GAC Principle that two-letter TLDs should not be delegated to avoid confusion with ccTLDs was adopted.
- There are advantages to an auction as a resolution mechanism of last resort.
 - It is an objective test; other means are subjective and might give unfair results, are unpredictable, and might be subject to abuses.
 - It assures the round will finish in a timely way.
 - It is thought that few auctions will actually occur. A negotiated settlement will be a lower-cost solution for the parties than an auction. The availability of auctions will encourage parties to settle. Even if there are proceeds from auctions, these will be expended in a process that includes independent oversight.
 - Ascending clock auctions typically employ an “activity rule,” where a bidder needs to have been “in” at early prices in the auction in order to continue to stay “in” at later prices. This is useful because in an ascending clock auction, bidders are

informed of the number of contending applications that have remained “in” after each round, but not their identities. With the specified activity rule, this demand information has real significance, as a competitor who has exited the auction cannot later re-enter.

- The auctioneer in ascending clock auctions has the ability to pace the speed at which prices increase. This facet has greatest importance if related items are auctioned simultaneously, as their prices can then be paced to increase together in relation to the level of demand. This has the advantage of providing bidders with information about the level of demand for other new gTLDs—and hence the value of a new gTLD—while the auction is still in progress.

9. ICANN Board Rationale On Trademark Protection in the New gTLD Program

9. ICANN Board Rationale On Trademark Protection in the New gTLD Program

I. Introduction

One of ICANN's core values is "[i]ntroducing and promoting competition in the registration of domain names where practicable and beneficial in the public interest." <http://www.icann.org/en/general/bylaws.htm>. In furtherance of this core value, ICANN is committed to ensuring that the concerns of all community members, including trademark holders, are considered and addressed to the extent practicable before launching the new generic top level domain ("gTLD") program.

ICANN has long recognized the importance of ensuring that the introduction of new gTLDs is conducted consistently with the protection of the rights of trademark holders, communities and other rights holders from abusive registration and infringement. In each previous expansion to the domain name system ("DNS"), the protection of legal rights of third parties was a feature of the application and evaluation process. For the new gTLD Program, ICANN has sought input from numerous stakeholders, including trademark holders, trademark lawyers, businesses, other constituencies and governments, to devise a multi-layered approach to protecting the rights of third parties. The approach includes a pre-delegation dispute resolution process for protecting existing legal rights at the top level. Also included in this approach are numerous rights protection mechanisms at the second level such as: (i) the establishment of a trademark clearinghouse to support both sunrise and trademark claims processes, a trademark post-delegation dispute resolution procedure (PDDRP), the Uniform Rapid Suspension System (URS) and the requirement for registries to maintain a thick Whois database. Of course, also available to all is the existing, long-standing and tested Uniform Domain Name Dispute Resolution Policy (UDRP).

II. History of the Board's Consideration of Trademark Protection

This section contains a brief history of significant actions taken to address trademark protection in the new gTLD program.

- On 1 February 2007, the Generic Names Supporting Organization ("GNSO") Council approved a request to form a Working Group on

Protecting the Rights of Others.

<http://gns0.icann.org/meetings/minutes-gns0-01feb07.html>

- On 15 March 2007, the GNSO Council ratified a Statement of Work for the newly-formed GNSO Working Group on Protecting the Rights of Others. <http://gns0.icann.org/meetings/minutes-gns0-15mar07.html>
- On 26 June 2007, the GNSO Working Group on Protecting the Rights of Others published its Final Report. gns0.icann.org/drafts/pro-wg-final-report-26jun07.pdf
- On 8 August 2008, the GNSO issues its “Final Report – Introduction of New Generic Top-Level Domains,” including a recommendation that “Strings must not infringe the existing legal rights of others”. <http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>
- On 21 December 2007, ICANN requested “expressions of interest from potential dispute resolution service providers for the new gTLD program.” <http://www.icann.org/en/topics/drsp-call-for-expressions-of-interest.pdf>
- On 26 June 2008, the Board adopted the GNSO’s Policy recommendations for the introduction of new gTLDs. See Board Resolution at http://www.icann.org/en/minutes/resolutions-26jun08.htm#_Toc76113171; see Board Meeting Transcript at https://par.icann.org/files/paris/ParisBoardMeeting_26June08.txt
- On 22 October 2008, ICANN published an Explanatory Memorandum on Protection of Rights of Others in New gTLDs and solicited comments. <http://www.icann.org/en/topics/new-gtlds/protection-rights-22oct08-en.pdf>
- After receiving significant community input, on 6 March 2009, the Board recognized trademark protection in the new gTLD program as an issue requiring additional input and analysis, the resolution of which would benefit the new gTLD program. The Board requested that the GNSO’s Intellectual Property Constituency convene an Implementation Recommendation Team (“IRT”) to solicit input,

analyze the issue, and prepare draft and final reports.

<http://www.icann.org/en/minutes/resolutions-06mar09.htm#07>

- On 24 April 2009, the IRT published its Preliminary Report for public comment.
<http://www.icann.org/en/topics/new-gtlds/irt-draft-report-trademark-protection-24apr09-en.pdf>; see public comments at <http://forum.icann.org/lists/irt-draft-report/>
- On 16 May 2009, the Board participated in a workshop on issues related to the new gTLD program, including trademark protections in particular.
- On 29 May 2009, the IRT published its Final Report and an “Open Letter from the IRT Introducing our Work.” ICANN and the IRT recognized that a significant intersection exists in between strategies to facilitate trademark protection and strategies to mitigate the risk of increased malicious conduct on the Internet.
<http://www.icann.org/en/topics/new-gtlds/irt-final-report-trademark-protection-29may09-en.pdf>
- On 20 June 2009, the Board participated in another workshop on issues related to the new gTLD program, including trademark protection.
- On 21 June 2009, the IRT presented its Final Report to the ICANN Board at the ICANN Sydney Open Meeting and provided briefings to the GNSO, interested constituencies and others.
<http://syd.icann.org/full-sched>
- On 26 June 2009, the Board acknowledged and thanked the IRT for its “intensive engagement” and its “detailed and articulate proposals.”
<http://www.icann.org/en/minutes/resolutions-26jun09.htm>
- Also on 26 June 2009, the Board acknowledged that ICANN staff had posted material on the new Draft Applicant Guidebook for public comment; thanked the community; and requested that all further comments be submitted by the close of the comment period on 20 July 2009. The Board also requested that the ICANN staff prepare a comprehensive set of implementation documents before the Board’s meeting on 30 October 2009. See Board

Resolution at <https://icann.org/en/minutes/resolutions-26jun09.htm>; see Board Meeting Transcript at <http://syd.icann.org/files/meetings/sydney2009/transcript-board-meeting-26jun09-en.txt>

- On 12 September 2009, the Board continued its discussion about trademark protection in new gTLDs at a Board Retreat.
- On 12 October 2009, the Board sent a letter to the GNSO, requesting that it review trademark protection policy for the new gTLD program as described in the Draft Applicant Guidebook and accompanying memoranda, including the proposals for a Trademark Clearinghouse and a Uniform Rapid Suspension System. <http://www.gnso.icann.org/correspondence/beckstrom-to-gnso-council-12oct09-en.pdf>
- On 28 October 2009, the GNSO adopted a resolution creating the Special Trademarks Issues review team (“STI”), which included representatives from each stakeholder group, the At-Large community, nominating committee appointees, and the Governmental Advisory Committee (“GAC”). <http://gnso.icann.org/resolutions/#200910>
- On 30 October 2009, the Board issued a resolution encouraging additional comments on the Draft Applicant Guidebook and new gTLD program. See Board Resolution at <https://icann.org/en/minutes/resolutions-30oct09-en.htm>; see Board Meeting Transcript at <https://icann.org/en/minutes/index-2009.htm>
- On 11 December 2009, the STI published its Report. See link to Report in <http://gnso.icann.org/resolutions/#200912>
- On 18 December 2009, the GNSO unanimously approved the recommendations contained in the STI’s report. <http://gnso.icann.org/resolutions/#200912>
- On 15 February 2010, ICANN published for public comment proposals for trademark protection in the new gTLD program, including the Trademark Clearinghouse, a Uniform Rapid Suspension System, and a post-delegation dispute resolution procedure.

<http://www.icann.org/en/announcements/announcement-4-15feb10-en.htm>

- On 10 March 2010, the GAC outlined to the Board some concerns and recommendations for the new gTLD program and its comments on version 3 of the Draft Applicant Guidebook.
<http://www.icann.org/en/correspondence/karklins-to-dengate-thrush-10mar10-en.pdf>
- On 12 March 2010, the Board acknowledged the community recommendations for trademark protections in the new gTLD program, including the development of a Trademark Clearinghouse and a Uniform Rapid Suspension System; resolved that the proposals for both be incorporated into version 4 of the Draft Applicant Guidebook; and directed ICANN staff to review any additional comments and develop final versions of the proposals for inclusion in the Draft Applicant Guidebook.
<http://www.icann.org/en/minutes/resolutions-12mar10-en.htm>
- Also on 12 March 2010, the Board approved the concept of a post-delegation dispute resolution procedure; and directed ICANN staff to review any additional comments and synthesize them, as appropriate, into a final draft procedure, and include the procedure in version 4 of the Draft Applicant Guidebook.
<http://www.icann.org/en/minutes/resolutions-12mar10-en.htm>
- On 28 May 2010, in response to further comments from the community, ICANN published for public comment revised proposals for the Trademark Clearinghouse, Uniform Rapid Suspension System, and a post-delegation dispute resolution procedure.
<http://www.icann.org/en/topics/new-gtlds/comments-4-en.htm>
- On 5 August 2010, the Board responded to the GAC's comments on version 3 of the Draft Applicant Guidebook and described the steps it took to protect trademarks in version 4 of the Draft Applicant Guidebook.
<http://www.icann.org/en/correspondence/dengate-thrush-to-dryden-05aug10-en.pdf>
- On 23 September 2010, the GAC outlined to the Board its concerns and recommendations for the new gTLD program and its comments on version 4 of the Draft Applicant Guidebook.

<http://www.icann.org/en/correspondence/dryden-to-dengate-thrush-23sep10-en.pdf>

- On 24-25 September 2010, the Board participated in another workshop on issues related to the new gTLD program, including trademark protections and passed some resolutions specifically addressing trademark protections.
<http://www.icann.org/en/minutes/resolutions-25sep10-en.htm#2.6>
- On 12 November 2010, ICANN posted for public comment version 5 of the Draft Applicant Guidebook, incorporating a number of protections for the rights of others, and a series of papers explaining certain aspects of the current proposals for the Trademark Clearinghouse, the Uniform Rapid Suspension System and related comments and analysis.
<http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-12nov10-en.pdf>
- On 10 December 2010, the Board resolved that ICANN had addressed the issue of trademark protection in new gTLDs by adopting and implementing various measures, including the establishment of a Trademark Clearinghouse, the Uniform Rapid Suspension System and the Post-Delegation Dispute Resolution Procedure. The Board further stated that these solutions reflected the negotiated position of the ICANN community, but that ICANN would continue to take into account public comment and the advice of the GAC.
See Board Resolution at <https://icann.org/en/minutes/resolutions-10dec10-en.htm>; see Board Meeting Minutes at <https://icann.org/en/minutes/minutes-10dec10-en.htm>
- On 21 February 2011, ICANN published numerous briefing papers on the trademark issues the GAC had identified as “outstanding” in September 2010.
<http://www.icann.org/en/announcements/announcement-6-21feb11-en.htm>
- On 23 February 2011, the GAC issued its “Indicative Scorecard” which included 30 specific recommendations relating to trademark protections on which it intended to consult with the.

<http://www.icann.org/en/topics/new-gtlds/gac-scorecard-23feb11-en.pdf>

- On 28 February 2011 and 1 March 2011, the GAC and the Board participated in a special two-day consultation to address the remaining outstanding issues related to the new gTLD program, including certain issues related to trademark protection.
<http://www.icann.org/en/announcements/announcement-23feb11-en.htm>
- On 4 March 2011, the Board published its comments on the GAC Scorecard.
<http://www.icann.org/en/topics/new-gtlds/board-notes-gac-scorecard-04mar11-en.pdf>
- On 15 April 2011, ICANN published an Explanatory Memorandum on Trademark Protection in the new gTLD program.
<http://www.icann.org/en/topics/new-gtlds/trademark-protection-claims-use-15apr11-en.pdf>
- Also on 15 April 2011, ICANN posted for comment version 6 of the Draft Applicant Guidebook, incorporating additional protections for the rights of others.
<http://www.icann.org/en/topics/new-gtlds/comments-6-en.htm>
- Also on 15 April 2011, ICANN issued “Revised ICANN Notes on: the GAC New gTLDs Scorecard, and GAC Comments to Board Response”
<http://www.icann.org/en/topics/new-gtlds/board-notes-gac-scorecard-clean-15apr11-en.pdf>
- On 19 April 2011, the GAC issued “Remaining points of difference between the ICANN Board and the Governmental Advisory Committee on New gTLD Rights Protection Mechanisms”
http://gac.icann.org/system/files/20110419-GAC_comments_on_NewgTLD_Rights_Protection.pdf
- On 26 May 2011, the GAC issued “GAC comments on the Applicant Guidebook (April 15th, 2011 version)”
<http://www.icann.org/en/topics/new-gtlds/gac-comments-new-gtlds-26may11-en.pdf>

- On 30 May 2011, ICANN posted the current version of the Applicant Guidebook.
<http://www.icann.org/en/topics/new-gtlds/comments-7-en.htm>

III. The Board’s Analysis of Trademark Protection in the New gTLD Program

A. Why the Board is Addressing This Issue Now

- ICANN’s mission statement and one of its founding principles is to promote competition. The expansion of gTLDs will allow for more innovation and choice in the Internet’s addressing system. The ICANN Board seeks to implement the new gTLD program together with measures designed to protect the rights of others on the Internet.
<http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm>
- The Board endorsed GNSO policy recommendation states that gTLD strings should not infringe the rights of others. The Board took that recommendation as an emphasis on the need to protect intellectual property rights.
- ICANN committed to the Internet community and governments, including the U.S. Department of Commerce that it would address trademark protection in new gTLDs prior to implementing the program.
- The ICANN Board is committed to making decisions based on solid factual investigation and expert analysis.

B. Who the Board Consulted

- The GNSO
<http://gns0.icann.org/>
- The GAC
<http://gac.icann.org/>
- The ICANN Implementation Recommendation Team (“IRT”)
https://st.icann.org/data/workspaces/new-gtld-overarching-issues/attachments/trademark_protection:20090407232008-0-9336/original/IRT-Directory.pdf

- The GNSO’s Special Trademark Issues Working Team (“STI”)
- The At-Large Advisory Committee (“ALAC”)
<http://www.icann.org/en/committees/alac/>
- All other stakeholders and members of the community
- Legal counsel

C. What Significant Non-Privileged Materials the Board Reviewed

- In addition to all public comments received on all versions of the Applicant Guidebook, as well as all relevant GAC Communiqués (see <http://gac.icann.org/communiques>), the ICANN Board reviewed the following reports from Stakeholders:
 - 1 June 2007 GNSO Working Group on Protecting the Rights of Others’ Final Report
<http://www.gnso.icann.org/drafts/GNSO-PRO-WG-final-01Jun07.pdf>
 - 8 August 2007 GNSO Final Report – Introduction of New Generic Top Level Domains.
<http://gnso.icann.org/issues/new-gtlds/pdp-dec05-fr-part-a-08aug07.htm>
 - 24 April 2009 IRT Draft Report and Public Comment Summary
<http://forum.icann.org/lists/irt-draft-report/pdfuyqR57X82f.pdf>
 - 24 April 2009 IRT Preliminary Report, and public comment thereon
<http://www.icann.org/en/topics/new-gtlds/irt-draft-report-trademark-protection-24apr09-en.pdf>; see public comments at <http://forum.icann.org/lists/irt-draft-report/>
 - 29 May 2009 IRT Final Report
<http://www.icann.org/en/topics/new-gtlds/irt-final-report-trademark-protection-29may09-en.pdf>
 - 29 May 2009 Implementation Recommendation Team Final Draft Report to ICANN Board

<http://www.icann.org/en/topics/new-gtlds/irt-final-report-trademark-protection-29may09-en.pdf>

- 4 October 2009 ICANN Comment and Analysis on IRT Report: Post-Delegation Dispute Mechanism and Other Topics
<http://www.icann.org/en/topics/new-gtlds/summary-analysis-irt-final-report-04oct09-en.pdf>
- 11 December 2009, STI Report
See link to Report in
<http://gnso.icann.org/resolutions/#200912>
- 12 December 2009 letter from the members of the former IRT to ICANN unanimously supporting the work of the STI process and recommendations concerning a trademark clearinghouse and a mandatory Uniform Rapid Suspension system
<http://www.icann.org/en/correspondence/irt-group-to-dengate-thrush-15dec09-en.pdf>
- 23 February 2011 GAC “Indicative Scorecard”
<http://www.icann.org/en/topics/new-gtlds/gac-scorecard-23feb11-en.pdf>
- 19 April 2011 GAC issued “Remaining points of difference between the ICANN Board and the Governmental Advisory Committee on New gTLD Rights Protection Mechanisms”
http://gac.icann.org/system/files/20110419-GAC_comments_on_NewgTLD_Rights_Protection.pdf
- 26 May 2011, the GAC issued “GAC comments on the Applicant Guidebook (April 15th, 2011 version)”
<http://www.icann.org/en/topics/new-gtlds/gac-comments-new-gtlds-26may11-en.pdf>
- ICANN prepared materials
 - Each version of the Applicant Guidebook, including all ICANN created explanatory memoranda and the specific proposals for trademark protections, along with hundreds of pages of public comment summaries and analysis related to trademark protections.
(i) <http://www.icann.org/en/topics/new-gtlds/comments->

[en.htm](http://www.icann.org/en/topics/new-gtlds/comments-2-en.htm#expmem); (ii) <http://www.icann.org/en/topics/new-gtlds/comments-2-en.htm#expmem>; (iii) <http://www.icann.org/en/topics/new-gtlds/comments-e-en.htm>; (iv) <http://www.icann.org/en/topics/new-gtlds/comments-3-en.htm>; (v) <http://www.icann.org/en/topics/new-gtlds/gnso-consultations-reports-en.htm>; (vi) <http://www.icann.org/en/announcements/announcement-4-15feb10-en.htm>; (vii) <http://www.icann.org/en/topics/new-gtlds/summaries-4-en.htm>; (viii) <http://www.icann.org/en/topics/new-gtlds/comments-5-en.htm>; (ix) <http://www.icann.org/en/topics/new-gtlds/comments-analysis-en.htm>; (x) <http://www.icann.org/en/topics/new-gtlds/dag-en.htm>; (xi) <http://www.icann.org/en/topics/new-gtlds/comments-6-en.htm>; and (xii) <http://www.icann.org/en/topics/new-gtlds/comments-7-en.htm>

D. What Concerns the Community Raised

- There is a need for adequate protection of intellectual property rights in new and existing gTLDs.
- If the introduction of new gTLDs leads to increased malicious conduct on the Internet, then trademark owners may pay a disproportionate percentage of costs associated with enforcing standards of behavior.
- Defensive domain name registrations in new gTLDs generate substantial costs for trademark owners.
- Registry behavior may cause or materially contribute to trademark abuse, whether through a TLD or through domain name registrations in the TLD.
- Legal rights that a party seeks to protect through Rights Protection Mechanisms should be capable of being authenticated, at least if the authenticity of such rights is challenged.

- Administrative dispute resolution procedures provide trademark owners with relatively swift and inexpensive alternatives to arbitration and litigation.
- Recurring sanctions may not be a sufficient remedy for wrongful conduct; suspension and termination may be necessary remedies.
- Policies developed to prevent and remedy trademark abuses in the DNS are expected to build upon the framework of existing intellectual property laws to minimize burdens on trademark owners and contribute to the orderly functioning of the DNS.
- The introduction of new gTLDs may lead to consumer confusion if one trademark owner registers its mark in one gTLD while another registers an identical or similar mark in another gTLD. To the extent that Internet users are unable (or become unaccustomed) to associate one mark with a specific business origin, the distinctive character of the mark will be diluted.

E. What Steps ICANN Has Taken or Is Taking to Protect the Rights of Others in New gTLDs

The Board believes the following measures will significantly help to protect the rights of others on the Internet. ICANN has incorporated the majority of these measures into the current version of the Applicant Guidebook and the registry agreement, and its efforts to implement the remaining measures are ongoing:

- Pre-delegation objection procedures.
- Mandatory publication by new gTLDs of policy statements on rights protection mechanisms, including measures that discourage registration of domain names that infringe intellectual property rights, reservation of specific names to prevent inappropriate name registrations, minimization of abusive registrations, compliance with applicable trademark and anti-cyber squatting legislation, protections for famous name and trademark owners and other measures.
- Mandatory maintenance of thick Whois records to ensure greater accessibility and improved stability of records.

- The establishment of a Trademark Clearinghouse as a central repository for rights information, creating efficiencies for trademark holders, registries, and registrars
- The requirement for all new registries to offer both a Trademarks Claims service and a Sunrise period.
- Post-delegation dispute resolution procedures that allow rights holders to address infringing activity by a registry operator that may be taking place after delegation.
- Implementation of the Uniform Rapid Suspension System that provides a streamline, lower-cost mechanism to suspend infringing names
- The continued application of the Uniform Domain Name Dispute Resolution Policy on all new gTLDs.

F. What Factors the Board Found to Be Significant

The Board considered numerous factors in its analysis of trademark protection in the new gTLD program. The Board found the following factors to be significant:

- The GNSO’s Working Group on Protecting the Rights of Others was not able to reach consensus on “best practices” for Rights Protection Mechanisms;
- While economic studies revealed that there will be both benefits and cost to trademark holders associated with new gTLDs, no determination could be made that the costs outweigh the benefits.
- New gTLDs would promote consumer welfare.
- The availability and efficacy of dispute resolution mechanisms and appropriately-designed modifications of ICANN procedures for protecting intellectual property.
- The need for dispute resolution mechanisms to be comprehensive enough to expand with the addition of new gTLDs.

- The need to balance the protection of trademark rights with the practical interests of compliant registry operators to minimize operational burdens and the legitimate expectations of good faith domain name registrants.
- The risk of increasing exposure of participants to litigation.
- The lack of reported problems with ICANN’s previous introductions of new TLDs.

IV. The Board’s Reasons for Proceeding to Launch the New gTLD Program While Implementing Measures to Protect Trademarks and Other Rights

- ICANN’s “default” position should be for creating more competition as opposed to having rules that restrict the ability of Internet stakeholders to innovate.
- New gTLDs offer new and innovative opportunities to Internet stakeholders.
- Brand owners might more easily create consumer awareness around their brands as a top-level name, reducing the effectiveness of phishing and other abuses.
- Revised applicant procedures and agreements reflecting the measures to mitigate the risk of malicious conduct will permit ICANN to address certain risks of abuse contractually and also will permit ICANN to refer abuses to appropriate authorities. ICANN can amend contracts and the applicant guidebook to address harms that may arise as a direct or indirect result of the new gTLD program.
- ICANN has addressed the principal concerns raised by stakeholders about the potential for proliferation of malicious conduct in the new gTLD space by implementing measures to mitigate that risk, including centralized zone file access, a high security TLD designation and other mechanisms. A combination of verified security measures and the implementation of DNSSEC will allow users to find and use more trusted DNS environments within the TLD market.
- ICANN has addressed the principal concerns raised by stakeholders about the protection of trademarks in the new gTLD space by

implementing other measures to enhance protections for trademarks and other rights, including pre-delegation dispute resolution procedures, a trademark clearinghouse, and post-delegation dispute resolution procedures.

- To the extent that there are costs to trademark owners or others, ICANN has worked with the community to address those concerns, and ICANN pledges to continue that effort.

EXHIBIT JZ-46

RATIONALE FOR BOARD DECISION ON ECONOMIC STUDIES ASSOCIATED WITH THE NEW gTLD PROGRAM

Executive Summary

ICANN was formed to foster user choice, consumer trust and competition in the domain name system (DNS) marketplace, as recently reaffirmed in the Affirmation of Commitments. After creating competition with respect to Internet registrars, which ICANN accomplished shortly after it was formed in 1998, ICANN turned its attention to creating competition with respect to Internet registries and, in particular, allowing for additional Top Level Domains (TLDs) to be created. ICANN's first efforts in this respect was the proof of concept round of a limited number of new generic TLDs (gTLDs) in 2000, followed by the addition of a limited number of sponsored TLDs in 2004-05. These modest additions to the root demonstrated that additional TLDs could be added without adversely affecting the security and stability of the domain name system.

ICANN's Board then turned its attention to possible additional TLD expansions, and the Board sought direction from the GNSO. In August 2007, the GNSO issued a lengthy report, following an extensive policy development process, in which the GNSO recommended that ICANN permit a considerable expansion in the number of new gTLDs.

Subsequent to the issuance of the GNSO's report, ICANN has commissioned several economic studies to inform the development of implementation procedures on a number of issues, including whether additional gTLDs would create competition at the registry level, whether new gTLDs should have price caps, and whether there should be restrictions on registry-registrar cross-ownership. ICANN intended the economic studies to address questions from the community (including the NTIA) about how to understand and balance costs and benefits of the new gTLD program.

Ultimately, ICANN obtained reports from several economists, including some of the world's leading economists who specialize in competition issues. Those economists generally supported an open approach in which new gTLDs would continue to be added to the root, subject to appropriate restrictions to address trademark and other competition concerns that ICANN has included in the gTLD Guidebook. Those studies greatly improved ICANN's understanding of the marketplace. Further, the studies made clear that the economists did not anticipate that the costs that might be associated with new gTLDs would outweigh the overall benefits of their introduction, and determined that it was too difficult to predict.

ICANN operates on the basic premise that competition law throughout the world is based upon, which is that increased competition is almost always valuable in order to stimulate innovation and consumer benefits. The studies that ICANN has commissioned have not demonstrated otherwise.

As a result, ICANN's Board has concluded that there is no economic basis that would justify stopping the New gTLD Program from proceeding and no further economic analysis will prove to be any more informative in that regard than those that have already been conducted.

Furthermore, the Board has determined that the numerous economic studies have sufficiently identified the key issues that require safeguards in the Applicant Guidebook and

that it is now the responsibility of the Community and the Board to finalize the appropriate rules that will maximize benefits and reduce potential costs.

I. History

ICANN's mission statement and one of its founding principles is to promote user choice, consumer trust and competition. ICANN has created significant competition at the registrar level, which has resulted in enormous benefits for consumers, including dramatically lower prices for second level domain names and considerable innovation in the registrar community. To date, however, ICANN has not enabled any meaningful competition at the registry level.

The ICANN Board is committed to making decisions based on solid factual investigation and expert analysis and ICANN has declared in the Affirmation of Commitments that it would continue to evaluate and analyze economic effects of the New gTLD Program.

The Board therefore commissioned several economic studies to inform its decision making on the New gTLD Program. This section contains a brief history of significant actions taken by ICANN to consider economic issues associated with the gTLD program.

In December 2005, the GNSO commenced a rigorous policy development process to determine whether (and the circumstances under which) new gTLDs would be added. A broad consensus was achieved in community deliberations that new gTLDs should be added to the root in order to stimulate competition further and for numerous other reasons.

In October 2006, unrelated to the proposal to develop new gTLDs, during a special telephonic meeting of the Board, the Board passed a resolution that requested that ICANN's President commission an independent study by a reputable economic consulting firm or organization to deliver findings on economic questions relating to the domain registration market. <https://community.icann.org/display/tap/2006-10-18+-Review+of+.BIZ%2C+.INFO+and+.ORG>; <http://www.icann.org/en/minutes/minutes-18oct06.htm>. The Board's request for this study had nothing to do with the anticipated policy for new gTLDs, which the Board had not yet acted upon because the GNSO's report had not been completed.

Subsequent to this 2006 Board meeting, ICANN commissioned CRA International (CRAI) to perform an economic study. (For more information about CRAI, *see* <http://www.crai.com>.) By the time CRAI began its study, however, several other important economic issues had arisen in conjunction with the ongoing development of the New gTLD Program. As a result, ICANN Staff asked CRAI to focus on those issues in particular, including issues associated with common ownership of registries and registrars.

In August 2007, the GNSO issued its final report regarding the introduction of new gTLDs. <http://gns0.icann.org/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm>.

In June 2008, the ICANN Board approved implementation of the new gTLD program. <http://www.icann.org/en/minutes/resolutions-26jun08.htm>.

In October 2008, CRAI issued its report. <http://icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf>.

After CRAI issued its October 2008 report, several members of the ICANN community requested that ICANN commission economic studies that would specifically address the possible economic consequences of new gTLDs. Although this was not the focus of the Board's resolution in October 2006, some commentators argued that ICANN should not proceed with new gTLDs until the Board received the results of the study the Board had requested in 2006. Accordingly, ICANN retained the services of economist Dennis Carlton, who recently had served as the chief economist to the United States Department of Justice Antitrust Division. Professor Carlton is one of the world's leading economic experts; he is based at the University of Chicago and is a member of the highly-regarded Compass Lexecon consulting firm.

In March 2009, Professor Carlton issued his first report, which states that ICANN retained him to analyze from an economic perspective ICANN's anticipated introduction of new generic top level domain names (gTLDs), and to identify and address the benefits and costs associated with ICANN's proposal. <http://www.icann.org/en/topics/new-gtlds/prelim-report-consumer-welfare-04mar09-en.pdf>.

Also in March 2009, Professor Carlton issued a second report, which specifically addresses the question of whether new gTLDs should have price caps. <http://www.icann.org/en/topics/new-gtlds/prelim-report-registry-price-caps-04mar09-en.pdf>.

In April 2009, economist Michael Kende submitted a report to ICANN entitled Assessment of Preliminary Reports on Competition and Pricing, on behalf of AT&T. Dr. Kende's report comments on Professor Carlton's March 2009 papers.

In June 2009, Professor Carlton submitted a report responding to Michael Kende's April 2009 Assessment of Preliminary Reports on Competition and Pricing. <http://www.icann.org/en/topics/new-gtlds/carlton-re-kende-assessment-05jun09-en.pdf>.

Also in June 2009, Professor Carlton issued his fourth and final report, entitled Report of Dennis Carlton regarding ICANN's Proposed Mechanism For Introducing New gTLDs. <http://www.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09-en.pdf>.

On 30 September 2009, ICANN committed (via its Affirmation of Commitments with the U.S. Department of Commerce) to further analyze the effects of new gTLDs within one year of their introduction. <http://www.icann.org/en/documents/affirmation-of-commitments-30sep09-en.htm>.

In the fall of 2009, ICANN retained the services of well-respected economists, Professor Michael Katz from the University of California Berkeley and Professor Greg Rosston from Stanford University to conduct even further economic analysis.

On 16 June 2010, Professors Michael Katz and Greg Rosston issued their first report. <http://icann.org/en/topics/new-gtlds/economic-analysis-of-new-gtlds-16jun10-en.pdf>.

On 3 December 2010, Professors Michael Katz and Greg Rosston issued their second report. <http://icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>.

II. The Main Issues Addressed in the Economic Studies

A. CRAI October 2008 Report

CRAI's report focuses on economic issues related to the new gTLD program, including issues associated with common ownership of registries and registrars. <http://icann.org/en/topics/new-gtlds/crai-report-24oct08-en.pdf>.

B. Professor Carlton's March 2009 Consumer Welfare Report

Professor Carlton's first report states that ICANN retained him to analyze from an economic perspective ICANN's anticipated introduction of new generic top level domain names (gTLDs), and to identify and address the benefits and costs associated with ICANN's proposal. <http://www.icann.org/en/topics/new-gtlds/prelim-report-consumer-welfare-04mar09-en.pdf>. Professor Carlton reached three primary conclusions:

- ICANN's proposed framework for introducing new TLDs is likely to improve consumer welfare by facilitating entry and creating new competition to the major gTLDs such as .com, .net, and .org. *See* Carlton March 2009 Consumer Welfare Report, page 2.
- To the extent that the introduction of new gTLDs gives rise to intellectual property concerns, they can be addressed through existing legal mechanisms and appropriately designed ICANN procedures for protecting intellectual property. It would not be sensible, from an economic perspective, to block entry of gTLDs to prevent potential trademark concerns. . . . The likely adverse effects such a strategy would have on consumer welfare would likely be greater than any potential harm, especially since appropriate steps can be taken if needed to address concerns regarding intellectual property rights. *See* Carlton March 2009 Consumer Welfare Report, page 3.
- Even if new gTLDs do not compete with .com and the other major TLDs for existing registrants, it is likely that consumers would nonetheless realize significant benefits from new gTLDs due to increased competition for new registrants and increased innovation that would likely be fostered by entry. *See* Carlton March 2009 Consumer Welfare Report, page 4.

C. Professor Carlton's March 2009 Price Cap Report

Also in March 2009, Professor Carlton issued a second report, which specifically addresses the question of whether new gTLDs should have price caps. <http://www.icann.org/en/topics/new-gtlds/prelim-report-registry-price-caps-04mar09-en.pdf>. His answer was negative:

- I conclude that price caps or ceilings on prices charged by operators of new gTLD registries are unnecessary to insure competitive benefits of the proposed process

for introducing new gTLDs. I further conclude that imposing price caps on the registries for new gTLDs could inhibit the development and marketplace acceptance of new gTLDs by limiting the pricing flexibility of entrants to the provision of new registry services without generating significant benefits to registrants of the new gTLDs. *See* Carlton March 2009 Price Cap Report, pages 2-3.

D. Michael Kende's Assessment of Preliminary Reports on Competition and Pricing

In April 2009, economist Michael Kende's released his "Assessment of Preliminary Reports on Competition and Pricing" (<http://forum.icann.org/lists/competition-pricing-prelim/pdf06MgHdyxb.pdf>), which was submitted to ICANN on behalf of AT&T. Although the Board did not commission the Kende report, the Board was provided with a copy of the report, which it considered together with Professor Carlton's response.

The Kende report had commented on Professor Carlton's March 2009 papers evaluating the likely impact on consumer welfare of ICANN's proposed framework for authorizing new gTLDs, and the appropriate role for price caps in services provided by new gTLDs. Dr. Kende opined that:

- [T]here is no evidence of the type of beneficial competition that Professor Carlton argues that the proposed gTLD framework will introduce. *See* Kende Report, page 11.
- The economic study that the Board directed the staff to undertake in 2006 [...] pointed the way to an appropriate and informed approach by ICANN, which would provide the answers to the questions that were addressed by Professor Carlton in his two preliminary studies. *See* Kende Report, page 19.
- New gTLDs would impose costs on trademark holders by requiring defensive registrations and Professor Carlton's March 2009 reports ... failed to analyze the present status and satisfaction of trademark holders with the current safeguards... *See* Kende Report, page 11.
- Price caps for new gTLDs would be appropriate due to the ...possibility that registries might [set prices] aimed at customers registering defensively, who may be less price sensitive *See* Kende Report, page 19. The absence of price caps for new gTLDs could result in the elimination of price caps for existing registries. *See* Kende Report, page 13.

Professor Carlton responded to Dr. Kende's paper (<http://www.icann.org/en/topics/new-gtlds/carlton-re-kende-assessment-05jun09-en.pdf>.) with the following points:

- There is no basis for Dr. Kende's claim that the study authorized by the ICANN Board in 2006, which proposed to analyze the scope of the market for registration services, is necessary for evaluating whether consumers would benefit from ICANN's proposed framework for introducing new gTLDs. Even if .com (or, for that matter, any other TLD) today exercises market power, new gTLDs could enhance consumer welfare by creating new products and fostering innovation, and promoting future competition with .com and other TLDs. That is, entry of a new

gTLD can be desirable even if the gTLD does not erode any of the market power that .com may possess. *See* Carlton Response Paper, page 3.

- While concerns about consumer confusion and defensive registrations need to be considered, Dr. Kende provides no basis for concluding that restricting the entry of new gTLDs is the best solution to reducing these costs. Alternative mechanisms exist, and others are actively being studied by ICANN, to protect trademark holders while preserving the procompetitive benefits of entry. *See* Carlton Response Paper, page 3.
- Dr. Kende exaggerates costs associated with ICANN's gTLD proposal. He defines defensive registrations as those which direct traffic to other sites, but this definition fails to distinguish between productive registrations which attract and maintain traffic as well as those undertaken only to protect trademarks. *See* Carlton Response Paper, page 3.
- [T]here is no basis for Dr. Kende's claim that the absence of price caps for new gTLDs will require elimination of price caps for existing TLDs. *See* Carlton Response Paper, page 4.

E. Professor Carlton June 2009 Report

In June 2009, Professor Carlton issued his fourth and final report, entitled Report of Dennis Carlton regarding ICANN's Proposed Mechanism For Introducing New gTLDs. <http://www.icann.org/en/topics/new-gtlds/carlton-re-proposed-mechanism-05jun09-en.pdf>. In this report, Professor Carlton responded to many of the comments that ICANN had received to his earlier reports, in particular comments from trademark interests, which expressed concerns that the cost of protecting their interests should overcome the desirability of expanding the number of gTLDs. Professor Carlton disagreed:

- This possibility [of the need for defensive registrations to protect trademark interests], and the harm to consumer welfare that results, is recognized by existing trademark law and in economic analyses of intellectual property. But to the extent that the introduction of new gTLDs gives rise to intellectual property concerns, they can be addressed through existing dispute resolution mechanisms and appropriately-designed modifications of ICANN procedures for protecting intellectual property. Given the availability of these alternative mechanisms for resolving trademark related disputes, the draconian remedy of restricting entry would be likely to harm consumer welfare compared to approaches based on these alternatives. *See* Carlton June 2009 Report, page 4.

Professor Carlton's report continued:

- Given the availability of alternative mechanisms to address concerns about consumer confusion and defensive registrations, which are discussed below, ICANN's plan to introduce new gTLDs is likely to benefit consumers by facilitating entry which would be expected both to bring new services to consumers and mitigate market power associated with .com and other major TLDs and to increase innovation. As a result, the proposal by DOJ, NTIA and others to delay or even preclude deployment of new gTLDs is likely inconsistent with

consumer interests. I conclude that such output restrictions are unnecessary and that the concerns motivating these restrictions can be addressed without resorting to draconian restrictions on entry, which essentially would freeze the number of TLDs less than fifteen years after the first commercial development of the Internet. *See* Carlton June 2009 Report, page 10.

F. Professors Katz and Rosston June 2010 and December 2010 Reports

Professors Michael Katz and Greg Rosston issued their first report in June 2010 and their second report in December 2010. <http://icann.org/en/topics/new-gtlds/economic-analysis-of-new-gtlds-16jun10-en.pdf>; <http://icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf>.

The Katz/Rosston studies are lengthy reports that include theoretical and empirical analysis. They undertake a comprehensive economic analysis of the market; they review prior economic studies on the subject; they conduct various empirical analyses; and they propose additional analysis that could be conducted once new gTLDs are introduced. In their second report, Katz and Rosston conclude:

- By definition, a new gTLD will benefit the community if the incremental benefits generated by introduction of the gTLD outweigh the incremental costs that it triggers. Incremental benefits refer to the benefits created by a new gTLD relative to alternatives. The case studies—particularly .mobi—demonstrate that, in at least some instances, there can be viable alternative means of achieving the stated objectives of a gTLD application and consequently, the incremental benefits of the new gTLD might be low. The case studies also highlight the fact that, at the time an application for delegation of a new gTLD is submitted, the magnitudes of both incremental benefits and incremental costs will very likely be uncertain and will vary by application. The case studies also demonstrate that there is a range of processes and policies that can be implemented to reduce the costs associated with the misappropriation of trademarks and other intellectual property. The lessons from the experiences with different intellectual property protection regimes in the gTLDs introduced to date can usefully inform future decisions about intellectual property protection mechanisms. Lastly, the registration behavior we examined in community-based gTLDs and the registration behavior by brand owners provides useful information about the value of new gTLDs and the value to brand owners of registering in different TLDs. The existence of substitutes is important to the evaluation of both benefits and costs. For example, the incremental costs of misappropriation may be lower than they first appear because a large number of third-level names already can be used to engage in misappropriation. The incremental costs come from the possibility that second-level domains have more powerful effects than third-level domains. *See* Katz/Rosston December 2010 Report, pages 74-75.

In short, while Professors Katz/Rosston note that there will, undoubtedly, be certain costs associated with the introduction of new gTLDs, there are a variety of mechanisms that are available to address those costs, and one cannot conclude that the costs of new gTLDs will, in fact, be greater than the undoubted benefits of the new gTLD program.

III. Board Determinations

In order to assess whether additional economic studies were still necessary at that stage, as requested by some members of the Community, the Board has considered the independent economic reports listed above and the extensive comments provided by the Community.

A. Benefits of continuing to open the gTLD space has been extensively addressed.

The economists generally support an open approach in which new gTLDs would be added to the root, subject to appropriate restrictions to address trademark and other competition concerns, which ICANN has now included in the gTLD Guidebook.

There is no economic support for the notion that ICANN should block all new gTLD proposals or conduct economic analysis of every new proposed gTLD in order to determine whether the theoretical benefits of that gTLD outweigh the theoretical costs.

ICANN's default position should be to foster competition as opposed to having rules that restrict the ability of gTLDs to innovate. Blocking all new gTLDs would be contrary to the basic economic principle that innovation and efficient competition is good and is highly likely to result in long-run benefits to consumers.

Whether new gTLDs will provide competition for .COM is not particularly relevant to the question of whether new gTLDs would promote competition in the marketplace generally. Empirical studies on this question would be extremely difficult, and it seems impossible to conclude that, less than fifteen years after the introduction of the commercial Internet, ICANN should make the decision to block all efforts to create competition at the registry level, including with respect to .COM absent absolute proof that the benefits associated with those gTLDs would not outweigh their costs.

As a result, ICANN's Board has concluded that there is no economic basis that would justify stopping the New gTLD Program from proceeding and no further economic analysis would prove to be any more informative in that regard than those that have already been conducted.

B. The three main economic issues that require attention have been clearly identified and discussed, namely:

- Ownership of registries and registrars
- The need for price caps
- The potential risks to trademark owners

The Board believes that the introduction of detailed rules and safeguard mechanisms based on extensive Community interaction in the successive versions of the draft applicant guidebook is the appropriate way to minimize the potential costs related to the implementation of this policy and optimize the use of the domain name space as a common global resource.

In particular, to the extent that there are costs to trademark owners or others, ICANN has worked extremely hard with the community to address those concerns, and ICANN

pledges to continue that effort and review the newly developed rights protections mechanisms on a regular basis to ensure they are working or, if necessary determine what revisions to be made to improve those mechanisms.

As a consequence, at this stage, and in order to limit the opportunity costs of further delays, the Board considers that there is no benefit in commissioning further studies on these issues and that efforts should now be focused on finalizing the appropriate mechanisms, in particular during the Board-GAC meeting in February and the community interaction at the Silicon Valley meeting in March.

IV. Impact Assessment

A. Are there Positive or Negative Community Impacts to this decision?

Determining that no further ICANN commissioned economic studies will inform the Board’s ultimate decision on moving forward with new gTLDs will likely have a neutral impact on the community. Such a decision will merely inform the community that the Board is not expected to delay the New gTLD Program for any further ICANN commissioned economic studies. Such a decision is likely to be seen positively by some in the community, and negatively by some in the community. In any case, the overall balance of costs and benefits in the new gTLD program will be determined through the implementation of the final rules and safeguards included in the Applicant Guidebook.

B. Are there financial impacts on ICANN, the Community and/or the Public?

The decision to commission no further economic studies will have a positive impact on ICANN operating budget and plan. It is now intended that ICANN will not be spending any further money on economic studies before launching the New gTLD Program and thus no further delays to the New gTLD Program will be based on the need to complete any further studies. There could be a financial impact on proponents or opponents of the New gTLD Program given that no more delays will be at the hands of a further commissioned economic study, but such impacts are not known at this time.

C. Security, Stability and Resiliency

The decision not to commission further economic studies is not likely to have any direct impact on the security, stability or resiliency of the DNS.

EXHIBIT JZ-47

**REPORT OF DENNIS CARLTON
REGARDING ICANN'S PROPOSED MECHANISM FOR
INTRODUCING NEW gTLDS**

June 5, 2009

I. INTRODUCTION

A. QUALIFICATIONS

1. I am the Katherine Dusak Miller Professor of Economics at the University of Chicago Booth School of Business. I received my A.B. in Applied Mathematics and Economics from Harvard University and my M.S. in Operations Research and Ph.D. in Economics from the Massachusetts Institute of Technology. I have served on the faculties of the Law School and the Department of Economics at The University of Chicago and the Department of Economics at the Massachusetts Institute of Technology.

2. I specialize in the economics of industrial organization, which is the study of individual markets and includes the study of antitrust and regulatory issues. I am co-author of the book Modern Industrial Organization, a leading text in the field of industrial organization, and I also have published numerous articles in academic journals and books. In addition, I am Co-Editor of the Journal of Law and Economics, a leading journal that publishes research applying economic analysis to industrial organization and legal matters, and serve, or have served, as an editor of a variety of scholarly journals.

3. In addition to my academic experience, I am a Senior Managing Director of Compass Lexecon, a consulting firm that specializes in the application of economics to legal and regulatory issues. From October 2006 through January 2008, I served as Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S.

Department of Justice, the most senior position in the Antitrust Division held by an economist. I also served as a Commissioner of the Antitrust Modernization Commission, created by the U.S. Congress in 2002 to evaluate U.S. antitrust laws. I have provided expert testimony before various state and federal courts, the U.S. Congress, a variety of state and federal regulatory agencies and foreign tribunals and have served as a consultant to several government agencies including the Department of Justice and the Federal Trade Commission. My curriculum vita is attached as Appendix I to this report.

4. I have been asked by ICANN to analyze from an economic perspective ICANN's anticipated introduction of new generic top level domain names (gTLDs), and to identify and address the benefits and costs associated with ICANN's proposal. In doing so I evaluate various concerns that have been raised by the Antitrust Division of the U.S. Departments of Justice (DOJ), the National Telecommunications Information Agency (NTIA) of the U.S. Department of Commerce, and comments of third parties submitted to ICANN either in response to its proposal to introduce new gTLDs or in response to my previous two preliminary reports.¹ In conjunction with this analysis, I also address whether price caps that limit prices and future increases in prices charged by registries of these new gTLDs would be necessary to achieve the potential competitive benefits of the new gTLDs.

1. See letters from Deborah A. Garza to Meredith A. Baker dated December 3, 2008 ("DOJ letter") and from Meredith A. Baker to Peter Dengate-Thrush dated December 18, 2008 ("NTIA letter") The NTIA letter also requests information about the effect of new gTLDs on the stability and security of the Domain Name System, which are not addressed in this report. (http://www.ntia.doc.gov/reportsarchive_2007_2008.html) For comments received by ICANN see <http://forum.icann.org/lists/competition-pricing-prelim> and <http://forum.icann.org/lists/gtld-guide>.

5. This report combines and updates my two preliminary reports that address ICANN’s proposed mechanism for introducing new gTLDs.² This report also addresses in part certain comments made in response to my preliminary reports.

B. OVERVIEW AND SUMMARY

6. I conclude that ICANN’s proposed framework for introducing new gTLDs is likely to facilitate entry and create new competition to the major gTLDs such as *.com*, *.net*, and *.org*. Like other actions that remove artificial restrictions on entry, the likely effect of ICANN’s proposal is to increase output, lower price and increase innovation. This conclusion is based on the fundamental principles that competition promotes consumer welfare and restrictions on entry impede competition.

7. The DOJ, NTIA and a variety of other parties have expressed concerns that the introduction of new gTLDs could harm consumer welfare by creating confusion among consumers and imposing costs of trademark holders by necessitating inefficient “defensive” registration of domain names in new gTLDs. While entry generally promotes consumer welfare, proper account also must be taken for property rights that protect firms’ investments in establishing a reputation and brand name. If such property rights are not protected, rivals have an incentive to “free ride” on the reputation created by rivals by imitating trademarks or adopting very similar marks thereby potentially creating consumer confusion. In the absence of alternative mechanisms for protecting trademarks, the expansion in the number of gTLDs could impose costs on trademark

2. Preliminary Report of Dennis Carlton Regarding the Impact of New gTLDs on Consumer Welfare, March 2009, and Preliminary Analysis of Dennis Carlton Regarding Price Caps for New gTLD Internet Registries, March 2009.

holders by creating an incentive for them to undertake “defensive” registrations that serve no purpose other than protecting their intellectual property.

8. This possibility, and the harm to consumer welfare that results, is recognized by existing trademark law and in economic analyses of intellectual property. But to the extent that the introduction of new gTLDs gives rise to intellectual property concerns, they can be addressed through existing dispute resolution mechanisms and appropriately-designed modifications of ICANN procedures for protecting intellectual property. Given the availability of these alternative mechanisms for resolving trademark-related disputes, the draconian remedy of restricting entry would be likely to harm consumer welfare compared to approaches based on these alternatives.

9. DOJ, NTIA and other commenters suggest that action on ICANN’s proposal should be delayed until ICANN completes the economic study it authorized in 2006 to address whether the domain registration market is one economic market or whether each TLD operates as a separate market. While this remains an interesting question deserving of analysis, evaluation of the impact of ICANN’s gTLD proposal on consumer welfare does not depend on the answer to this question. Indeed, even if new gTLDs do not compete with *.com* and the other major TLDs for existing registrants, it is likely that consumers would nonetheless realize significant benefits from new gTLDs due to increased competition for new registrants and increased innovation that would likely be fostered by entry.

10. I also conclude that price caps or ceilings on prices charged by operators of new gTLD registries are not necessary to ensure that consumers benefit from new gTLDs. Proponents of price caps suggest that caps on prices charged for registrations on new gTLDs is necessary because trademark holders could be charged high prices to

protect their trademarks and due to concerns that registrants for new gTLDs could face high prices due to their high costs of switching to other registries.

11. However, the ability of ICANN to protect trademark holders through existing dispute resolution mechanisms and appropriately-designed modifications of ICANN procedures for protecting intellectual property implies that price caps are not necessary to protect trademark holders. In addition, the fact that registrants for new gTLDs face switching costs also does not provide a rationale for imposing price caps. The rates charged by new gTLDs will face competition from existing registries and other entrants, and operators of new gTLD registries that attempt to act opportunistically by subsequently raising prices face significant risk of harming their reputation and the loss of future customers. Further, the imposition of price caps for new gTLDs may inhibit the development and marketplace acceptance of new gTLDs by limiting the pricing flexibility of entrants to the provision of new registry services without generating significant benefits to registrants of the new gTLDs.

II. BACKGROUND ON ICANN’S PROPOSAL

A. ECONOMICS OF THE DOMAIN NAME SYSTEM

12. Despite the introduction of several new gTLDs in recent years, Internet activity today continues to be dominated by a small number of registries. For example, the *.com* TLD today has more than 80 million registered domain names while *.net* and *.org* respectively have roughly 12 million and 7 million registered domain names.³ While a handful of new gTLDs have been introduced in recent years, these have achieved only limited success in attracting registrants and Internet activity. For example, *.info* and *.biz*,

3. ICANN Registry Operator Monthly Reports January 2009.
(<http://www.icann.org/en/tlds/monthly-reports/>)

both introduced in 2001, have attracted roughly 5 million and 2 million domain names respectively.⁴

13. Currently, all agreements between ICANN and the registries operating unsponsored gTLDs include price maximums and limits on permissible future price increases that can be charged to registrars.⁵ Registrars, in turn, charge rates to registrants that are not regulated by ICANN. Registrars typically deal with multiple registries and offer a variety of additional services to registrants such as web site hosting and design.

14. Registrants that subscribe to a particular Internet domain name face costs when switching registries because the TLD is a component of the domain name which, by definition, cannot be ported across registries. That is, if the registrant that operates the website *cars.com* wants to switch to the *.net* registry, then it must adopt *cars.net* (if available) or adopt another *.net* domain name. Switching costs faced by registrants may create incentives for registries and registrars to act opportunistically by raising prices. However, ex ante competition to attract new registrants, as well as harm to the reputation of the registry and/or registrar, limits their ability to engage in such conduct.

15. An increase in the number of gTLDs increases the number of alternatives available to consumers, and thus offers the potential for increased competition, reduced prices, and increased output. The availability of new gTLDs also offers increased opportunities for registries and registrars to develop innovative services or business models that could provide significant opportunities for increases in consumer welfare.

4. Id.

5. See, e.g., Section 7.3 of *.com* Registry Agreement between ICANN and VeriSign, dated March 1, 2006. Unsponsored gTLDs (*.com*, *.biz*, *.info*, *.name*, *.net*, *.org*, *.pro*) have price caps; all sponsored gTLDs (*.aero*, *.asia*, *.cat*, *.coop*, *.jobs*, *.mobi*, *.museum*, *.tel*, *.travel*), which in most cases are smaller than the unsponsored gTLDs, have no price caps.

B. ICANN'S PROPOSED PROCEDURES FOR DEPLOYING NEW GTLDS

16. ICANN has proposed a framework for authorizing new gTLDs. ICANN's draft Guidebook for applicants details the various phases of the ICANN's review process and the requirements that need to be met for approval.⁶ ICANN will evaluate both the technical and financial capabilities of the applicant, the effect of the proposed gTLD on consumer confusion, and the effects of the proposed gTLD on Internet stability.⁷

17. Objections to gTLD applications can be filed by various parties including existing TLD registries, other applicants, holders of intellectual property rights (such as trademarks) and others.⁸ Objections can be made on a limited number of grounds including string confusion, legal rights (e.g. trademark infringement), morality and public order, and community objection.

18. ICANN has also initiated a process to address the concerns of trademark holders related to the introduction of new gTLDs. ICANN formed the Implementation Recommendation Team ("IRT") which has issued a report, discussed in more detail below, that contains recommendations relating to new trademark protection mechanisms to alleviate these concerns.

6. See ICANN, New gTLD Program: Second Draft Applicant Guidebook, February 18, 2009 ("Draft Guidebook"), (<http://icann.org/en/topics/new-gtlds/comments-2-en.htm>).

7. Draft Guidebook, p. 2-2.

8. A party that objects to an application must pay a dispute filing fee, which is expected to be between \$1,000 and \$5,000. At that time, the applicant has 30 days to respond (and pay the same fee). Both parties will then submit advanced payment to cover the dispute resolution proceedings, with payment refunded to the prevailing party (Draft Guidebook, p. 1-24 to 1-25).

C. SUMMARY OF CONCERNS ABOUT ICANN’S PROPOSAL TO EXPAND gTLDs.

19. The DOJ, NTIA and various other parties have expressed concerns that the introduction of new gTLDs could harm consumers and/or trademark holders. Broadly summarized, these comments reflect the view that the introduction of new gTLDs will harm consumers (registrants) by creating confusion and by imposing significant costs on trademark holders by forcing them to establish “defensive” registrations with the new gTLDs to protect their trademarks and existing domain names. Comments by the DOJ and other parties also claim that the introduction of new gTLDs might not result in increased competition that would lower prices or improve service to registrants.⁹

20. For example, the Association of National Advertisers states that new gTLDs will generate higher “costs of brand management and create new opportunities for others to infringe, phish, and engage in other deceptive practices. As a result, brand owners and consumers will be net losers.”¹⁰ Similarly, the U.S. Chamber of Commerce concludes that, “the proposed gTLD program [...] will compel businesses to invest millions of dollars in defensive domain registrations and litigation [...]”¹¹ The Kende

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9. AT&T expresses similar concerns in their economic report that responds to my two preliminary reports. See Michael Kende “Assessment of ICANN Preliminary Reports on Competition and Pricing”, April 17 2009 (“Kende Report”) submitted on behalf of AT&T. I am preparing a separate report that addresses aspects of the Kende Report.
10. ANA letter, p. 1. (<http://forum.icann.org/lists/gtld-guide/mail2.html>) “Phishing” is “a computing scam where the perpetrators try to get sensitive personal information by sending users to fake, but legitimate looking websites.” (Source: <http://onlinebusiness.about.com/od/onlinebusinessglossary/g/phishing.htm> accessed on February 17, 2008)
11. U.S. Chamber of Commerce letter, p.1. (<http://forum.icann.org/lists/gtld-guide/index.html>)

Report claims “that the proposed introduction of new gTLDs could bring significant additional costs and resource burdens.”¹²

21. The DOJ concludes that “the need of many registrants to purchase domains in many or most gTLDs allows each gTLD registry operator to impose costs on registrants that purchase domains simply because a gTLD exists. [...] In light of these findings, we believe that the introduction of new gTLDs under the RFP could impose substantial additional domain registration costs on many consumers and that many new gTLD registry operators may have market power over registrants.”¹³ The Kende Report also suggests regulating registry prices as registries of new gTLDs could extract high payments from trademark owners because “defensive registrations are much less price sensitive than basic new registrations”.¹⁴

22. In addition, both the NTIA and DOJ also express concerns regarding ICANN’s proposed application and review process itself. Due to concerns that even new gTLDs have market power over its registrants, both DOJ and NTIA recommend ICANN use competitive bidding in assigning new TLDs, with applicants submitting bids that specify maximum prices and permissible price increases.¹⁵ The DOJ and NTIA further recommend that, in instances in which competitive bidding may not be effective, ICANN incorporate provisions directly into their agreement with new registries, such as price restrictions or requirements of long-term contracts with users, to prevent the exercise of

12. Kende Report, p.11.

13. DOJ letter, p. 3.

14. Kende Report, p.12

15. DOJ letter, p.7 and NTIA letter, p.2.

market power.¹⁶ Finally, the DOJ suggests that ICANN require periodic competitive bidding for renewal of registry agreements.¹⁷

III. CONSUMERS ARE LIKELY TO BENEFIT FROM THE INTRODUCTION OF NEW GTLDS.

23. The comments by NTIA, DOJ, and others appropriately focus on the impact of new gTLDs on consumer welfare, but I believe come to the wrong conclusion.¹⁸ This section shows that, given the availability of alternative mechanisms to address concerns about consumer confusion and defensive registrations, which are discussed below, ICANN's plan to introduce new gTLDs is likely to benefit consumers by facilitating entry which would be expected both to bring new services to consumers and mitigate market power associated with *.com* and other major TLDs and to increase innovation. As a result, the proposal by DOJ, NTIA and others to delay or even preclude deployment of new gTLDs is likely inconsistent with consumer interests. I conclude that such output restrictions are unnecessary and that the concerns motivating these restrictions can be addressed without resorting to draconian restrictions on entry, which essentially would freeze the number of TLDs less than fifteen years after the first commercial development of the Internet.

16. I understand that the current proposed agreement between ICANN and new gTLD registries contains a requirement for registries to offer a 10-year registration option to registrants.

17. DOJ letter, p.7 and NTIA letter, p.2.

18. DOJ letter, p. 2, "...ICANN's general approach to new gTLDs should be revised to give greater consideration to consumer interests. ICANN should more carefully weigh potential consumer harms against potential consumer benefits..."

A. POLICIES THAT FOSTER ENTRY HELP ADDRESS CONCERNS ABOUT MARKET POWER ASSOCIATED WITH .COM, AND OTHER MAJOR TLDS

24. The DOJ and others have expressed concern that *.com* and other gTLDs possess market power.¹⁹ To the extent they do, however, ICANN’s proposal to expand the number of TLDs available could serve to limit any such concern. As the Horizontal Merger Guidelines note, entry has the potential to “counteract the competitive effects of concern.”²⁰ More generally, entry is recognized to play a central role in maintaining competitive markets.²¹ Hence, to the extent that *.com* and other TLDs have any market power today, expansion of the number of TLDs could constrain it in the future.

25. DOJ claims that “... the creation of additional gTLDs is unlikely to constrain the exercise of market power by existing TLDs...”²² The DOJ, however, seems to focus on the effect of new TLDs on existing registrants, not on their impact on competition for new registrants. The DOJ, for example, speculates that “the network effects that make *.com* registrations so valuable to consumers will be difficult for other TLDs to overcome.”²³ However, any market power associated with *.com* will attract entrants with strategies built around bringing new registrants to the new gTLDs. Restricting the opportunity for entrants to compete for such profits necessarily has the effect of protecting and preserving the profits of the *.com* registry and its registrars.

26. Both economic theory and empirical evidence indicate the elimination of entry barriers is likely to have a number of beneficial effects on consumer welfare,

19. See, e.g., DOJ letter, p. 3 and Kende report p17.

20. Horizontal Merger Guidelines of the U.S. Department of Justice and Federal Trade Commission, p. 25.

21. See Carlton, *Modern Industrial Organization*, 4th ed., pp. 77-82.

22. DOJ letter, p. 1.

23. DOJ letter, p. 2.

including lower prices, expanded output, and increased innovation. The benefits of entry are the increased set of alternatives available to consumers and, more generally, the increased the elasticity of demand faced by existing firms creating an incentive for them to reduce their price. Consumer welfare is enhanced because product variety increases and output expands, resulting in an increase in consumer surplus. An empirical analysis of the effect of entry of new gTLDs, such as *.info* and *.biz*, on output and pricing would likely contribute to our understanding of the effects of entry on consumer welfare, but, as explained below, even if such a study indicated that this entry did not result in a reduction in *.com* registrations or fees, this would not lead to the conclusion that entry was not beneficial.²⁴

27. The DOJ suggests that new gTLDs may not provide substantial competition for *.com* and other existing TLDs, stressing the ubiquity of *.com* and the fact that that *existing* registrants face significant costs of switching to another TLD. Even if this is the case, this logic does not extend to competition between *.com* and new gTLDs to attract *new* registrants. The increase in the number of alternatives available to new registrants provides an incentive for registries for both new and existing gTLDs to reduce prices, improve service quality, and offer innovative services as they compete for new registrants. Note that this benefit holds even if *.com* pricing continues to be regulated through price caps because competition has the potential for inducing registries of regulated TLDs to reduce prices below these caps and to develop new and improved services.

24. The data on registrations and price necessary to perform such a study are maintained by registries, not by ICANN.

28. Furthermore, even if entry of new gTLDs did not affect the prices charged by .com and other existing TLDs, entry would still be likely to increase consumer welfare, which NTIA and DOJ appear to ignore. When registrants select a new gTLD instead of an existing one, they reveal that they are better off due to the expansion in the number of available alternatives. That is, the expansion in the number of available alternatives (including both TLDs and the second-level names) alone is itself likely to increase consumer welfare.

29. Removing entry barriers also is likely to foster innovation. In the absence of competition from new gTLDs, registries and registrars that serve .com and other major TLDs face limited incentives to develop new technologies and/or improved services that may help attract new customers. However, absent restriction on new gTLDs, potential new entrants will be motivated to develop new technologies and methods as a way to overcome .com's first mover advantage. This, in turn, increases the incentives to innovate faced by registrars of .com and other incumbent registries as they strive to sign up new registrants.²⁵

30. A variety of innovations are likely to be facilitated by expansion of the number of gTLDs. For example:

- A gTLD dedicated to serving the financial services industry might require registrants to provide secure transactions. The certification provided in the gTLD name thus provides valuable information to consumers who desire secure financial transactions over the Internet.

25. See Carlton and Perloff, *Modern Industrial Organization*, 4th ed. p. 564.

- A new gTLD may offer International Domain Names so that a URL (e.g., <http://www.google.com>) can be presented in the language of the region, facilitating the provision of products by registrars in multi-language services.
- New gTLDs are expected to focus efforts at serving high targeted markets, such as the customers and suppliers of a given firm while others, perhaps, will focus on serving a variety of registrants in a given geographic area.²⁶

31. As these examples suggests, many of the benefits of new gTLDs can be realized even if the new gTLD would not compete today on price with existing TLDs. For example, expansion in the number of gTLDs that fostered increased innovation or simply expanded aggregate Internet registrations and utilization would generate improvements in consumer welfare even if the new gTLDs operated in antitrust markets that are distinct from *.com*. Of course, potential consumer confusion could be reduced to a minimum by having only a single gTLD (*.com*), but it is unlikely that this would be in consumers' interest. I discuss this issue in more detail below.

32. DOJ expressed concern that "some new gTLDs envisioned by the RFP likely would have market power..."²⁷ However, even if true, this fact alone again does not provide a basis for restricting entry. Even if certain new gTLDs possessed some market power, allowing their entry would still enhance consumer welfare, just as entry which results in the creation of a duopoly from a monopoly enhances consumer welfare even though both duopolists typically will have market power. To illustrate this point,

26. Connecting.NYC Inc. letter to ICANN (<http://forum.icann.org/lists/gtld-guide/index.html>).

27. DOJ letter, p.1.

imagine an industry with several differentiated products, each of which has some market power. It is inconceivable that anyone would find it generally desirable to restrict entry into such an industry based on the view that entry will fail to erode the market power of existing products.

B. NEW gTLDs ARE LIKELY TO BENEFIT CONSUMERS EVEN IF THEY DO NOT COMPETE DIRECTLY WITH .COM.

33. New gTLDs also can enhance consumer welfare by providing information to Internet users that facilitates navigation of the Internet, even if the new gTLDs have limited substitutability with *.com*. This is due to the likelihood that new gTLDs will be designed to serve consumer needs that *.com* does not meet well. For example, because domain names contain information content that is of value to consumers, some new gTLDs may facilitate consumers' Internet navigation and search by more rapidly directing them to websites with the desired content. For example, company-specific TLDs (e.g., *.Ford*) may facilitate the ability of Ford customers to obtain product information as well as the interaction of suppliers and dealers with Ford. Similarly, new generic TLDs, like *.cars*, may facilitate the ability of consumers to obtain both generic information about cars as well as the ability to access the websites of car manufacturers, suppliers, and other car consumers that use this gTLD to host their websites.

C. EVALUATION OF ICANN'S PROPOSAL DOES NOT REQUIRE DETAILED STUDY OF SCOPE OF COMPETITION AMONG TLDs.

34. As noted above, both the DOJ and NTIA recommend that ICANN should postpone the introduction of new gTLDs until it studies the scope of competition among TLDs along the lines that the ICANN Board proposed in 2006.²⁸ At that time, ICANN

28. See DOJ letter, p. 6 and NTIA letter, p. 1.

proposed to analyze, among other things: (i) whether each TLD functions as a distinct economic market; (ii) the effects of switching costs involved in moving from one TLD to another; and (iii) the effect of the existing TLD structure on the pricing by entrants.

35. While these issues are of economic interest, analysis of these questions is not necessary for evaluating ICANN's gTLD proposal. Even if *.com* (or any other TLD) today exercises market power, there is no basis to conclude that new gTLDs would not enhance consumer welfare by creating new products and fostering innovation, and would likely promote future competition with *.com* and other TLDs. In addition, the concerns about consumer confusion, cybersquatting and the potential for new gTLDs to motivate new defensive registrations also arise whether existing TLDs constitute distinct antitrust markets or whether they are appropriately considered to be part of a broader market.

D. REQUIRING PROOF OF COMPETITIVE BENEFITS BEFORE AUTHORIZING ENTRY IS LIKELY TO HARM CONSUMER WELFARE.

36. Parties that have commented on ICANN's proposal, including DOJ and NITA, suggest that due to the presence of potential costs to trademark holders and others posed by new gTLDs, the competitive benefits of new gTLDs should be proven before ICANN authorizes their use.²⁹ For example, NTIA states that "[i]t is unclear that the threshold question of whether the potential consumer benefits outweigh the potential costs has been adequately addressed and determined."³⁰ This approach is inconsistent with the widely-held view, described above, that the entry benefits consumers by expanding output and lowering price.

29. See, e.g., DOJ letter, p. 2, NTIA letter, p. 1 and comment submitted by AT&T to ICANN on December 15, 2008 (<http://forum.icann.org/lists/gtld-guide/>).

30. NTIA letter, p. 1.

37. Restricting ICANN's ability to expand the number of gTLDs is economically efficient only if costs from new gTLDs, including increased consumer confusion and/or higher costs of monitoring and enforcing trademarks, exceeds the potential benefits to consumers from new gTLDs, which likely include lower prices for domain names, increased output, and increased innovation. As noted above, many of these benefits of new gTLDs and domains established on those gTLDs can be realized even if the new gTLDs do not compete with existing TLDs.

38. Requiring entrants to justify entry on a cost/benefit basis, however, is likely to result in significant consumer harm because the competitive benefit of new business methods or technologies facilitated by entry can be very hard to predict *a priori*. Economic literature shows that innovations are a principal source of the growth in GNP and consumer welfare over time. Most notably, Robert Solow, who was awarded the 1987 Nobel Prize in Economics for his work on the sources of economic growth, noted in his Nobel Prize lecture that “the rate of growth...depends entirely on the rate of technological process.”³¹ Following in this tradition, in their well-known book, *Innovation and Growth in the Global Economy*, Gene Grossman and Elhanan Helpman describe innovation as “the engine of long-run growth.”³²

39. Economic literature also stresses that innovations and new products generate large increases in consumer welfare, while regulatory policies that limit or delay entry and the spread of innovation can substantially reduce welfare. As part of his extensive research on the consumer welfare gains generated by new goods, Jerry

31. Robert M. Solow, Nobel Prize Lecture, December 8, 1987.

32. Gene Grossman and Elhanan Helpman, 1993, *Innovation and Growth in the Global Economy*, p. 18.

Hausman has found that “the introduction of cellular telephone services has led to gains in consumer welfare which now exceed \$25 billion per year,” and that the consumer welfare cost of the regulatory delay of this introduction was close to \$100 billion.³³ In their volume “The Economics of New Goods,” Timothy Bresnahan and Robert Gordon review the economic literature and conclude, “[c]learly, new goods are at the heart of economic progress.”³⁴ In his 2002 paper on consumer welfare gains resulting from the introduction of the minivan, Amil Petrin notes that “...large improvements in consumers’ standard of living arise from competition as firms cannibalize each other’s profits by seeking new goods that give them some temporary market power.”³⁵

40. As this suggests, restrictions on entry are likely to promote consumer welfare under only very unusual circumstances. The imposition of such restrictions, however, is likely to benefit existing market participants by limiting competition from firms offering innovative services and new business models. Actions that protect any market power that .com and other gTLDs may possess are unlikely to benefit consumers.

IV. CONCERNS EXPRESSED ABOUT TRADEMARK PROTECTION DO NOT SUPPORT RESTRICTIONS ON ENTRY.

41. As noted above, the DOJ and others argue that trademark holders will perceive the need to register domain names with new gTLD registries solely for defensive purposes, in order to avoid costs associated with improper use by others of the their trade name.³⁶ That is, the DOJ and others argue that entry should be restricted because such competition may increase trademark holders’ costs of protecting their

33. Jerry Hausman, 1998, “New Products and Price Indices,” NBER Website, http://www.nber.org/reporter/fall98/hausman_fall98.html.

34. Timothy Bresnahan and Robert Gordon, 1997, *The Economics of New Goods*, p. 1.

35. Amil Petrin, 2002, “Quantifying the Benefits of New Products: The Case of the Minivan,” *Journal of Political Economy*, p. 705.

36. See, e.g. DOJ letter, p. 5.

intellectual property. This section shows that while costs associated with defending trademarks are real, other mechanisms other than preventing entry are available to address these concerns and that these alternatives can preserve the benefits of increased competition resulting from entry.

A. THE ECONOMIC RATIONALE FOR TRADEMARK PROTECTION DOES NOT JUSTIFY RESTRICTING ENTRY OF NEW GTLDS.

42. Domain names help reduce the costs of searching for information available on the Internet and registrants select domain names to help attract consumers to their sites.³⁷ Thus, registrants face concerns that other similarly-named sites may create confusion, raise search costs faced by consumers, free ride on the registrant's reputation, and harm the registrant's ability to attract traffic.

43. As this suggests, the economic function of domain names is related to the economic function of trademarks, which also protect the trademark holder's intellectual property by preventing confusion created by rivals' efforts to free ride on the trademark holder's reputation. Similarly, registrants have a significant interest in protecting their domain names from imitation and free riding by others that attempt to utilize a trade name that is protected or that is confusingly similar to a protected trademark.

44. In analyzing the economic function of trademarks, William Landes and Richard Posner explain that:

...a trademark is a word, symbol, or other signifier used to distinguish a good or service produced by one firm from the goods or services of other firms. To perform its naming function a trademark or brand name...must not be duplicated. To allow another maker of decaffeinated coffee to sell its coffee under the name "Sanka" would destroy the benefit of the

37. Improvements in search engines could provide another valuable method by which consumers can identify and find websites.

name...If the law does not prevent it, free riding may destroy the information capital embodied in a trademark, and the prospect of free riding may therefore eliminate the incentive to develop a valuable trademark in the first place.³⁸

45. “Generic” terms, however, generally cannot be trademarked.³⁹ As defined by Landes and Posner, “[a] generic name or term is by definition the name not of a brand but of an entire product: ‘airplane’ and ‘computer’ are examples.”⁴⁰ The lack of legal protection for generic terms is consistent with principles of economic efficiency because granting trademarks for such terms to one firm can raise search costs faced by consumers and hinder competition from other firms. Granting legal protection for generic terms also serves no purpose in protecting incentives for firms to invest in creating a reputation and information capital in the term. As Landes and Posner explain:

... if a single firm is given the exclusive right to use the word or words that identify an entire product, as distinct from an individual brand of the product, competition with other firms that make the same product will be impaired. Thus, if a particular manufacturer of personal computers could not use the terms “personal computer” or “PC” in its advertising or labeling because another firm had the exclusive rights to these terms, it might have to describe its product as “a machine capable of doing word processing and high-speed calculations and other data manipulations, using a central processing unit,” etc...Because it is harder to recall long than short phrases, a lengthy description may well convey less usable information about the firm’s product than a single word or a short phrase, so search costs will rise.⁴¹

46. Internet domain names can be based both on trademarks (e.g., *Ford.com*) and generic terms (*cars.com*), and the new gTLDs that would be permitted under

38. W. Landes and R. Posner, *The Economic Structure of Intellectual Property Law*, Belknap Press of Harvard University Press (2003), pp. 166-168.

39. Landes and Posner, Chapter 7, p. 190. There are exceptions to this general statement. For example, a term can be generic in connection with some goods (and thus not be protected) but can be trademarked for its use in connection with other goods. For example, the word “apple” is generic when applied to fruit but can be trademarked when applied to computers.

40. Landes and Posner, pp. 190-91.

41. Landes and Posner, p. 175.

ICANN's proposal also may include both trademarks (*.Ford*) and generic terms (*.cars*). Economic evaluation of ICANN's proposal raises distinct issues for gTLDs that use generic terms and trademarks and reflects the competing interest of protecting intellectual property of trademark holders and promoting the unrestricted use of generic terms.

47. Trademark protection extends to domain names so, for example, only Ford has the ability to use and/or prevent others from using domain names such as *Ford.com* and, similarly, register *.Ford* as a gTLD.⁴² Congress enacted the Anti-Cybersquatting Consumer Protection Act in 1999 to clarify the role of trademarks in domain names and to prevent "cybersquatting," (i.e., attempts by firms to acquire domain names, including those involving trademarks, for the purpose of reselling them to trademark holders). ICANN also has established mechanisms for resolving domain name disputes that arise in the existing gTLDs; for example, in 1999 it established the its Uniform Dispute Resolution Policy in 1999 which set procedures for resolving disputes over domain names.⁴³ As discussed further below, ICANN has also initiated a process to address the concerns of trademark holders and improve the mechanisms for resolving disputes about the use of trademarks in domain names.

48. Nonetheless, as various comments on ICANN's gTLD proposal emphasize, trademark holders still expend effort to monitor unauthorized use of their marks and to enforce their property rights. Many trademark holders are concerned that the introduction of new gTLDs will require additional costs related to monitoring and enforcing the use of these trademarks, including entering into "defensive" registrations

42. Anti-Cybersquatting Consumer Protection Act, November 1999.

43. Under these procedures, an objector files a complaint with an ICANN-approved dispute resolution service provider which follows ICANN-specified policies and procedures for addressing the complaint.

that serve no efficiency-enhancing purpose and are undertaken only to protect the trademark holder's intellectual property.⁴⁴ At the same time, however, it is important to note that registrants that use generic terms in domain names also have a private interest to restrict competition by limiting the use of these terms by rivals in domain names and gTLDs, although there is limited potential benefit in terms of reduced monitoring and enforcement costs in such circumstances from limiting the use of generic terms.

49. Indeed, a significant potential benefit of the introduction of new gTLDs would be to facilitate expansion in the use of generic terms in domain names. As discussed above, the use of such terms can promote consumer welfare by reducing search costs faced by Internet users. For example, the establishment of *.cars* as a gTLD is likely to facilitate the ability of Internet users to identify information related to automobiles and is likely to help registrants in attracting Internet visitors.

B. ENTRY RESTRICTIONS ARE LIKELY TO BE AN INEFFICIENT MECHANISM FOR PROTECTING TRADEMARKS.

50. While protecting trademarks and intellectual property promote consumer welfare, economic efficiency requires that trademark holders be protected at the minimum possible cost. Entry restrictions are unlikely to be the most efficient way of protecting trademark holders.

51. Mechanisms currently exist for protecting the use of trademarks in domain names. As mentioned previously, in addition to trademark law, ICANN maintains the UPRP for resolving claims that a registrant owns a domain name that infringes an existing trademark. While a large number of disputes are routinely resolved under these

44. See, e.g., comments submitted by Microsoft and US Telecom to ICANN, December 15, 2008 (<http://forum.icann.org/lists/gtld-guide/>).

procedures, and there may be dissatisfaction with these rules by trademark holders, entry restrictions are an extreme approach to addressing trademark concerns when alternative approaches, such as modifying existing dispute resolution mechanisms, may also help achieve these goals while preserving the benefits of entry to consumers.

52. For example, the economic literature shows that frivolous requests for gTLDs and/or frivolous challenges of new names can be deterred by requiring the party that loses a challenge to bear the legal cost of both parties. Under such “loser pays” rules, a non-trademark holder that attempted to obtain a domain name or a gTLD based on a trademark would need to pay the legal fees of the trademark holder and related administrative fees if the trademark holder successfully challenges the domain name or gTLD. Such a rule would deter frivolous attempts by non-trademark holders to obtain domain names that are based on trademark terms or are confusingly similar to such terms as well as the need for defensive registrations.⁴⁵ Under a more extreme version of the “loser pays” rule, parties with domain names found to violate a trademark can be assessed a penalty.⁴⁶

53. In addition, ICANN has undertaken a process to evaluate concerns of trademark holders by eliciting recommendations for improving mechanisms for protecting trademark holders’ property that help prevent the unauthorized use of trademarks in domain names. In March 2009, ICANN formed the IRT whose purpose is to consider and recommend proposals to help protect the legal rights of trademark owners

45. J. Hughes and E. Snyder, “Litigation and Settlement Under the English and American Rules: Theory and Evidence,” 38 J. Law and Econ. 225 (1995).

46. To ensure that firms have sufficient funds to pay penalties, ICANN could require that a bond be posted at the time a dispute is filed or a domain is registered.

focusing on, but not limited to, issues arising with respect to the introduction of new gTLDs.⁴⁷

54. The IRT recently has issued a report which proposes new mechanisms for protecting trademark holders. These include: creating a centralized intellectual property clearinghouse to support new gTLD registries; instituting a mechanism for blocking registration of domain names with certain globally protected trademarks (those contained in the Globally Protected Marks List) in both the top and second level domain name space; and creating a venue for expedited proceedings for blatant trademark infringement and abuse. The IRT's recommendations to the ICANN Board are currently under review, and further public comment is anticipated.

55. Finally, the expansion in the number of TLDs under ICANN's proposal would appear to raise no new issues relating to enforcing and monitoring trademarks that do not arise under the existing domain name system. For example, consider Ford's attempt to protect its domain name *Ford.com*. There are already numerous alternative names it maintains and monitors, including *Fordvehicles.com*, *Lincoln.com*, etc. It is unclear how much the introduction of a new gTLD – say, *.cars* designed for sites related to car – would further increase the required effort and associated costs of monitoring use of Ford marks. The introduction of Ford trademarks in the *.cars* gTLD raises the same concern as in other gTLDs and thus appears to raise no new issues relating to the identification or monitoring of trademarks in domain names.

47. IRT Report (<http://www.icann.org/en/announcements/announcement-4-29may09-en.htm>)

C. OPPONENTS APPEAR TO OVERSTATE THE MAGNITUDE OF THE “DEFENSIVE REGISTRATION” CONCERNS.

56. While concerns regarding the impact of gTLDs on the need for “defensive registrations” merit close attention, relatively little is known about the extent of such registrations. AT&T’s economic report claims to document the extent of “defensive registrations” but appears to overstate the magnitude of such concerns. More specifically, the Kende Report presents data from MarkMonitor for five “representative” firms, suggesting that well over 99 percent of the registrations of these firms are “defensive.” Dr. Kende defines defensive registrations as those which “redirect traffic to a core registration” and claims that these serve no purpose other than to “prevent a cybersquatter from registering them.”⁴⁸

57. However, many registrations that “redirect traffic” to other sites serve productive purposes of attracting and retaining Internet traffic, not merely to prevent cybersquatting. Dr. Kende fails to distinguish between these alternative types of “defensive” registrations.⁴⁹ For example, the following types of registrations that direct traffic to other sites would help attract traffic and would not be maintained simply to prevent cybersquatting:

48. Kende Report, p.7. More fully, Dr. Kende defines defensive registrations as follows: “Defensive Registration: These registrations are not unique, in that they do not resolve, or they redirect traffic back to a core registration, or do not contain unique content – for instance registrations that contain typos of a trademarked name. These are registered to prevent a cybersquatter from registering them instead, or are recovered from cybersquatters who registered them first.”

49. Dr. Kende has not produced the data or survey forms that provide the basis of his analysis. As a result, it is unclear whether survey respondents consider all registrations that merely redirect traffic to other domains as unproductive “defensive” investments or whether this is Dr. Kende’s interpretation.

- Registrations involving trademark names that direct traffic to the website of a corporate parent;
- Registrations involving trademark names no longer in active use;
- Registrations involving trademark names not currently used that may be used in the future;
- Registrations involving common misspellings that redirect traffic to the core site.

58. To take just one small example, my own firm – Compass Lexecon – currently maintains several dozen registrations in addition to *compasslexecon.com*. These include *compass.com* and *lexecon.com*, which were the registrations maintained by the two companies that merged to form Compass Lexecon.⁵⁰ These domains do not currently host content but instead route traffic to *compasslexecon.com*. Maintaining these registrations prevents the potential loss of traffic generated by individuals who may not be aware of the firm’s name change. However, these would be considered unproductive “defensive registrations” under the standard adopted by Dr. Kende.

59. There are a myriad of reasons that firms maintain “defensive” registrations that have little to do with trademark protections.⁵¹ There is no doubt that some registrations are made to prevent trademark abuse. However, Dr. Kende’s failure to distinguish “defensive registrations” designed to prevent cybersquatting alone from those that help attract and maintain Internet traffic (while redirecting it to another site) in

50. In addition, Compass Lexecon maintains a variety of .cc registrations and related registrations that direct traffic to the *compasslexecon.com* site.

51. To cite one additional example, firms may register a variety of “reverse zone” domain names for monitoring the source of Internet traffic. These would be classified as “defensive” by Dr. Kende but are wholly unrelated to trademark protection.

summarizing the MarkMonitor data exaggerates the adverse consequences of ICANN's gTLD proposal.

60. In addition, the relatively limited success of new TLDs such as *.info* and *.biz* suggests that defensive registrations are less important than suggested by AT&T and other commenters. Since their introduction in 2001, *.info* has attracted 5 million registrants and *.biz* has attracted 2 million, far below the roughly 80 million registrants using *.com*.⁵² While some of the registrations for domain names under the new gTLDs may have been made for defensive purposes, the limited number of registrations for new gTLDs indicates that the vast majority of *.com* registrants did not find a compelling reason to undertake defensive registrations in the new gTLDs.

V. PRICE CAPS ARE UNLIKELY TO GENERATE SIGNIFICANT CONSUMER BENEFITS.

61. Various parties have suggested that new gTLDs be subject to price caps similar to those faced by *.com* and other major non-sponsored TLDs such as *.net*, *.org*, *.info*, *.biz* and others.⁵³ The two main concerns motivating this proposal are: (i) that trademark owners' can be charged supracompetitive prices for defensive registrations, and (ii) that incumbent registrants can be charged supracompetitive prices as a result of costs they face from switching to another registry. This section shows that both of these concerns are misplaced.

A. THE AVAILABILITY OF ALTERNATIVE MECHANISMS OF PROTECTING TRADEMARK HOLDERS IMPLIES THAT PRICE CAPS ARE NOT NECESSARY TO PROTECT CONSUMERS.

62. DOJ and other suggest that price caps on new gTLDs are appropriate because new gTLDs will be able to charge supracompetitive prices because the demand

52. ICANN Registry Operator Monthly Reports, January 2009.

53. See e.g. NTIA Letter, p.2 and DOJ Letter p.7

for defensive registrations is likely to be “highly inelastic.”⁵⁴ However, the demand for such registrations is likely to be highly inelastic only if dispute mechanisms for enforcing property rights are ineffective.

63. As discussed above, mechanisms are already in place for resolving disputes, and ICANN has been actively engaged in proceedings designed to modify and improve these mechanisms. In the presence of appropriately designed proposals to protect trademarks, there is no reason to expect that new gTLDs will be able to charge excessive prices, and no need to impose price caps. As discussed in more detail below, the imposition of price caps is likely to discourage investment in new gTLDs and discourage experimentation with new business models with the potential to challenge *.com* and other major TLDs for new registrants.

B. SWITCHING COSTS CREATE INCENTIVES FOR “EX ANTE” COMPETITION AMONG SUPPLIERS.

64. Registrants that adopt a particular Internet domain name face costs from switching registries because the use of the TLD in the domain name prevents Internet addresses from being ported across registries. That is, the holder of a domain name that wants to switch registries must, at a minimum, adopt a new TLD. Switching costs arise for a variety of products and industries and the existence of such costs can make customers, to some degree, beholden to their suppliers. This can create an incentive for registry operators to act opportunistically by raising prices after a registrant obtains a new domain name above levels registrars might reasonably expect at the time they obtain their domain name. Proponents of incorporating price caps for registry services into registry

54. Kende Report, p. 12.

contracts might argue that such caps eliminate the risk of such opportunistic behavior by registries.

65. However, competition among suppliers to attract new customers in markets characterized by switching costs limits or eliminates the suppliers' incentive and ability to act opportunistically. For example, a supplier that imposes unexpected or unreasonable price increases will quickly harm its reputation making it more difficult to continue to attract new customers. Therefore, even in the absence of price caps, competition can reduce or eliminate the incentive for suppliers to act opportunistically.

66. The economic literature recognizes the role of "ex ante" competition in discouraging opportunistic behavior by suppliers of products that embody switching costs. For example, a leading academic study of switching costs notes:

The monopoly power that firms gain over their respective market segments leads to vigorous competition for market share before consumers have attached themselves to suppliers.⁵⁵

67. The economic literature further recognizes that a firm that acts opportunistically in dealing with customers facing switching costs is likely to suffer harm to its reputation, which limits its ability to attract new customers in the long-run:

... every seller has "captive" buyers in the short run. We should not worry about slight degrees of monopoly power; the free market will take care of them faster than antitrust law could do. The seller who exploits its "monopoly" over replacement parts will find himself without many purchasers of his original equipment in the next period.⁵⁶

55. Klemperer, Paul. "Markets with Consumer Switching Costs" *Quarterly Journal of Economics* 102 (1987), 375-394, p. 377. I reached similar conclusions in my own analysis of the *Kodak* case. Carlton, Dennis. "A General Analysis of Exclusionary Conduct and Refusal to Deal – Why *Aspen* and *Kodak* are Misguided," *Antitrust Law Journal* 68 (2001), 659-683, p. 679.

56. Posner, Richard. *Antitrust Law*, 2nd Edition. Chicago: University of Chicago Press, 2001, p. 230.

68. This sentiment is also echoed by Carl Shapiro (1995), the current Deputy Assistant Attorney General in the Antitrust Division of the U.S. Department of Justice, in his analysis of the U.S. Supreme Court's decision in *Eastman Kodak Co. v. Image Technical Services, Inc.*⁵⁷ This case involved claims that Kodak violated antitrust laws by limiting its customers' ability to obtain replacement parts from firms other than Kodak. Shapiro concludes that suppliers in growing markets face the strongest incentives to preserve their reputation and thus to avoid opportunistic behavior.⁵⁸ This is because, in a growing market, an opportunistic firm risks greater future losses than do similar firms in stable or declining markets. Thus, the rationale for imposing price caps is weakest in rapidly growing industries.

69. Ex ante competition serves to protect both uninformed consumers, which face greater risk of opportunistic price increases, as well as better informed consumers because both sets of consumers pay the same prices. In addition, other contractual mechanisms can be negotiated to avoid opportunistic behavior by suppliers. For example, firms and customers may enter into long-term contracts with renewal provisions that specify a supplier's ability to change prices over time.

C. COMPETITION AMONG EXISTING AND NEW TLD REGISTRIES LIMITS CONCERNS ABOUT OPPORTUNISTIC BEHAVIOR.

70. As early as 1998, the Federal Trade Commission ("FTC") concluded that the existence of switching costs faced by holders of domain names did not raise a significant impediment to the privatization of the Internet Domain Name System. In

57. Shapiro, Carl. "Aftermarkets and Consumer Welfare: Making Sense of *Kodak*," *Antitrust Law Journal* 63 (1994), 483-511.

58. Shapiro (1994), p 490.

response to the National Telecommunications and Information Administration's request for comments on this issue, the FTC concluded:

It would appear plausible that the absence of domain name portability across registries could impose a switching cost on users who change registries... It is theoretically possible, therefore, that a supplier could raise the future prices to locked-in customers...

The economic analysis of markets with switching costs has identified a number of factors that, in appropriate circumstances, can diminish the ability and the incentive of a supplier to act opportunistically with respect to its locked-in customers....

Overall, we would conclude that while the possibility of supplier opportunism exists, the potential benefits to customers from enhanced competition – such as possible price reductions and quality improvements – argue in favor of [assignment of registries to for-profit firms].⁵⁹

71. Today, competition among a variety of TLDs reduces concerns about opportunistic behavior by new gTLD registries that may result from switching costs faced by registrants of new domain names. First, new gTLD registries face competition from a wide variety of alternatives, including the major existing TLDs (.com, .net, .org), less established existing TLDs (e.g., info, .biz), country-code TLDs, sponsored TLDs (such as .museum, .aero), and other new gTLD entrants. The existence of these alternatives implies that new gTLDs are unlikely to be successful in attracting a significant number of new registrants if they engage in opportunistic behavior that harms their reputation. Under these circumstances, price caps are not necessary to protect registrants using the new gTLD registries.

72. Concerns about opportunistic behavior by registry operators are further limited to the extent that new gTLDs provide services using existing registrars. It would

59. Comment of the Staffs of the Bureaus of Economics and Competition of the FTC – In the Matter of Improvement of Technical Management of Internet Names and Addresses” March 23, 1998, p. 3-4.

be expected that registrars' on-going involvement in the provision of domain-name related services leaves them well informed about potentially opportunistic behavior by registry operators and in a position to shift potential customers away from new gTLDs that act in this manner.

73. The fact that the existing major TLDs are currently subject to price caps further constrains the ability of new gTLD registry operators to charge non-competitive prices. More specifically, the current agreements between the U.S. Department of Commerce, ICANN, and VeriSign cap the price increases that VeriSign can charge registrars for the .com and .net TLDs. Several other non-sponsored TLDs (such as .info and .biz) are also subject to price caps. While the appropriateness of these price caps may be debatable, the existence of the caps limits the prices that new gTLDs can charge by capping the price that the major registry operators can charge.

74. While the major TLDs are subject to price caps, a number of the new sponsored TLDs, such as *.museum*, *.travel*, and *.tel*, are not. I am unaware of any complaints from registrars or end-users that obtain services from these new sponsored TLDs that their registries have acted opportunistically by raising prices significantly to existing customers. This provides further evidence that price caps are not necessary to protect registrants from opportunistic behavior by new gTLD registries.

75. Finally, the continuing growth of Internet services further reduces concerns about opportunistic behavior by operators of the new gTLD registries. As noted above, incentives for opportunistic behavior are lower in rapidly growing industries. The number of registered domain names as well as aggregate Internet usage has grown dramatically in recent years and is expected to continue its rapid growth. In addition, the

number of Internet users in the U.S. has grown from roughly 31 million in 1997, to 90 million in 2000 and to more than 183 million in 2007.⁶⁰ The Internet is projected to continue this growth in the future. For example, total IP traffic is projected to increase six-fold from 2007 to 2012.⁶¹ Under these circumstances, operators of new gTLD registries that acted opportunistically would face the loss of significant future business.

VI. CONCLUSION

76. The benefits of free entry are well-recognized, and the introduction of new gTLDs is likely to benefit consumers by subjecting *.com* and other gTLDs to increased competition, widening choice available to consumers, and facilitating innovation. At the same time, claims that the introduction of new gTLDs will necessitate widespread defensive registrations appear to be exaggerated and are inconsistent with the oft-noted observation that there have been a limited number of registrations on gTLDs introduced in recent years. Existing legal framework and ICANN-established procedures provide mechanisms for protecting trademarks and addressing concerns about consumer confusion. If necessary, various additional mechanisms could be created by ICANN to protect against abuse of existing trademarks. The draconian remedy of precluding entry as means of preventing the possibility of a need for defensive registrations is unlikely to be an efficient mechanism for dealing with these costs because it deprives consumers of the benefits of entry.

77. In addition, there is no economic rationale for imposing price caps on registries of these new gTLDs. The existing and proposed ICANN procedures that are

60. Statistical Abstract of the United States 2007: Internet Usage and Online Services (<http://www.census.gov>)

61. See “Cisco Visual Networking Index – Forecast and Methodology, 2007-12” available at http://newsroom.cisco.com/dlls/2008/prod_061608b.html

designed to protect the rights of trademark holders reduce the need both for defensive registrations as well as price caps to protect trademark holders. Apart from concerns about protecting trademark holders, there are a variety of market mechanisms that protect consumers who face switching costs, such as holders of domain names of new gTLD registries. In the absence of price caps, operators of new gTLD registries that attempt to act opportunistically by raising prices to registrars after registrants sign up for domain names face significant risk of harming their reputation and the loss of future customers. These risks are heightened by the availability of domain names from a wide variety of alternative registries, by the fact that prices charged by the major registries are already subject to price caps, and by the expected continued growth of the Internet. At the same time, requiring new gTLDs to cap their prices limits their flexibility in attempting to attract new customers, conflicting with ICANN's well-considered goal of fostering competition in the provision of registry services by facilitating the introduction of new gTLDs.

78. In sum, given ICANN's ability and incentive to modify existing procedures and adopt new ones that protect registrants' the property rights, it would be a mistake at this time to address this concern through the draconian remedy of a ban on all new TLDs.

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Lewis Bernstein Memorial Antitrust Lecture, Washington, D.C., 2006
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Milton Handler Lecture, New York, 2004
Keynote Address to the International Competition Network, Mexico, 2004
Alexander Brody Distinguished Lecture, Yeshiva University, 2000
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Advisory Board, Massachusetts Institute of Technology, Department of Economics, 1999 - present
Co-Editor, Competition Policy International (CPI), 2004 – present
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Deputy Assistant Attorney General for Economic Analysis, Antitrust Division, U.S. Department of Justice, 2006 - 2008
Presidential Appointment to the Antitrust Modernization Commission, March 17, 2004 - 2007
Invited Panelist at Public Hearing on the Retail Banking Sector Inquiry: Payment Cards, before the European Commission in Brussels, Belgium, July 17, 2006.
Consultant on Merger Guidelines to the FTC, 2003
Professor, George Mason Institute for Judges, October 2001
Chairman, FTC Round Table on Empirical Industrial Organization (September 11, 2001)
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Member, Steering Committee, Social Science Research Council, Program in Applied Economics, 1997 - 1999
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Editorial Board, *Intellectual Property Fraud Reporter*, 1990 - 1995
Consultant on Merger Guidelines to the U.S. Department of Justice, 1991 - 1992
Member, Advisory Committee to the Bureau of the Census, 1987 - 1990
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EXHIBIT JZ-48

THE DOMAIN NAME INDUSTRY BRIEF

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THE VERISIGN DOMAIN REPORT

AS A GLOBAL LEADER IN DOMAIN NAMES AND INTERNET SECURITY, VERISIGN REVIEWS THE STATE OF THE DOMAIN NAME INDUSTRY THROUGH A VARIETY OF STATISTICAL AND ANALYTICAL RESEARCH. VERISIGN PROVIDES THIS BRIEFING TO HIGHLIGHT IMPORTANT TRENDS IN DOMAIN NAME REGISTRATIONS, INCLUDING KEY PERFORMANCE INDICATORS AND GROWTH OPPORTUNITIES, TO INDUSTRY ANALYSTS, MEDIA AND BUSINESSES.



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EXECUTIVE SUMMARY

The fourth quarter of 2017 closed with approximately 332.4 million domain name registrations across all top-level domains (TLDs), an increase of approximately 1.7 million domain name registrations, or 0.5 percent from the third quarter of 2017.^{1,2} Domain name registrations have grown by 3.1 million, or 0.9 percent, year over year.^{1,2}

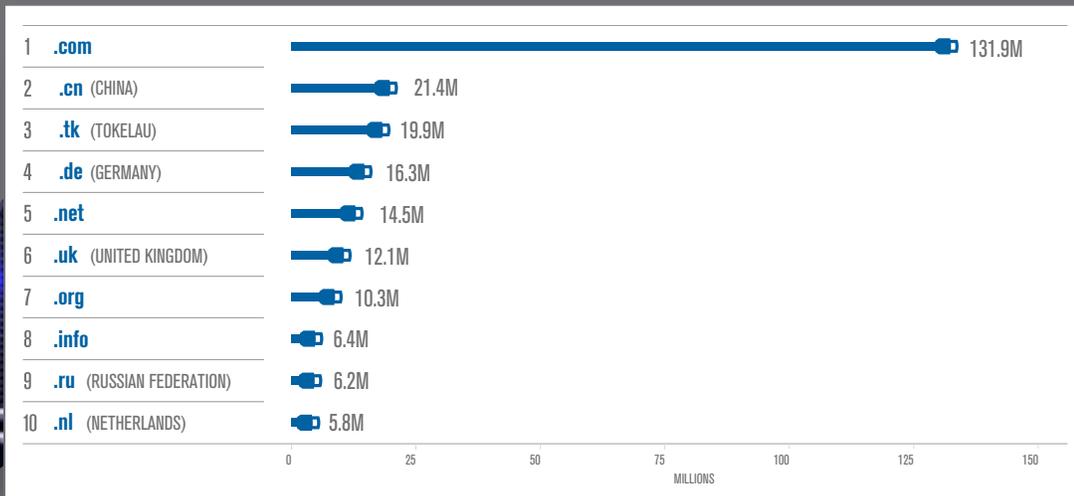
Total country-code TLD (ccTLD) domain name registrations were approximately 146.1 million, a 1.0 percent increase over the third quarter of 2017, and a 2.4 percent increase year over year.^{1,2}

The .com and .net TLDs had a combined total of approximately 146.4 million domain name registrations in the domain name base³ at the end of the fourth quarter of 2017. This represents a 2.9 percent increase year over year. As of Dec. 31, 2017, the .com domain name base totaled 131.9 million domain name registrations, while the .net domain name base totaled 14.5 million domain name registrations.

New .com and .net domain name registrations totaled 9.0 million during the fourth quarter of 2017 compared to 8.8 million for the fourth quarter in 2016.

TOP 10 LARGEST TLDs BY NUMBER OF REPORTED DOMAIN NAMES

Source: Zooknic, Q4 2017; Verisign, Q4 2017; Centralized Zone Data Service, Q4 2017



As of Dec. 31, 2017, the largest TLDs were .com, .cn, .tk, .de, .net, .uk, .org, .info, .ru and .nl.¹

The average sale price for the top 10 .com domain names reported by DN Journal as sold in the aftermarket in Q4 2017.⁴

\$469K
USD



Growth of .com and .net domain names redirecting to popular global social media and e-commerce sites compared to Q4 2016.⁵

INSTAGRAM
44%

YOUTUBE
18%

LINKEDIN
18%

FACEBOOK
17%

ETSY
16%

TWITTER
16%



1 The figure(s) includes domain names in the .tk ccTLD. tk is a free ccTLD that provides free domain names to individuals and businesses. Revenue is generated by monetizing expired domain names. Domain names no longer in use by the registrant or expired are taken back by the registry and the residual traffic is sold to advertising networks. As such, there are no deleted .tk domain names. <http://www.businesswire.com/news/home/20131216006048/en/Freenom-Closes-3M-Series-Funding#UxeJGNJDv9s>. The .tk zone reflected here is based on data from Q3 2016, which is the most recent data available.

2 The generic top-level (gTLD) and ccTLD data cited in this brief: (i) includes ccTLD Internationalized Domain Names, (ii) is an estimate as of the time this brief was developed and (iii) is subject to change as more complete data is received.

3 The domain name base is the active zone plus the number of domain names that are registered but not configured for use in the respective Top-Level Domain zone file plus the number of domain names that are in a client or server hold status.

4 Source: DN Journal (accessed Jan. 12, 2018) <http://www.dnjournal.com/archive/domainsales/2017/2017-top-100-sales-charts.htm>.

5 Source: VeriSign, Inc. data and Q4 2016 DNIB.

LARGEST ccTLDs BY NUMBER OF REPORTED DOMAIN NAMES

Source: Zooknic, Q4 2017

For further information on the Domain Name Industry Brief methodology, please refer to the last page of this brief.

Total ccTLD domain name registrations were approximately 146.1 million in the fourth quarter of 2017, with an increase of 1.4 million domain name registrations, or a 1.0 percent increase compared to the third quarter of 2017.^{1,2} ccTLDs increased by approximately 3.4 million domain name registrations, or 2.4 percent, year over year.^{1,2} Without including .tk, ccTLD domain name registrations increased approximately 0.7 million in the fourth quarter of 2017, a 0.5 percent increase compared to the third quarter of 2017 and ccTLDs increased by approximately 2.3 million domain name registrations, or 1.8 percent, year over year.



The top 10 ccTLDs, as of Dec. 31, 2017, were .cn (China), .tk (Tokelau), .de (Germany), .uk (United Kingdom), .ru (Russian Federation), .nl (Netherlands), .br (Brazil), .eu (European Union), .fr (France) and .au (Australia).^{1,2} As of Dec. 31, 2017, there were 302 global ccTLD extensions delegated in the root, including Internationalized Domain Names (IDNs), with the top 10 ccTLDs composing 65.5 percent of all ccTLD domain name registrations.^{1,2}

TOP 10 TRENDING KEYWORDS IN .COM AND .NET IN Q4 2017

This chart represents the top 10 trending keywords registered in English in .com and .net domain name registrations for the fourth quarter of 2017.

Verisign publishes a monthly blog post highlighting domain name registration keyword trends that reflects trends from the previous month. Using the same methodology, this list reflects the keywords with the highest percentage of registration growth relative to the preceding quarter.

This method is intended to highlight the new and changing keywords seen in .com and .net domain name registrations. By evaluating the keywords with the largest percentage shift, the top 10 that have seen a significant shift in end-user interest quarter over quarter can be identified.

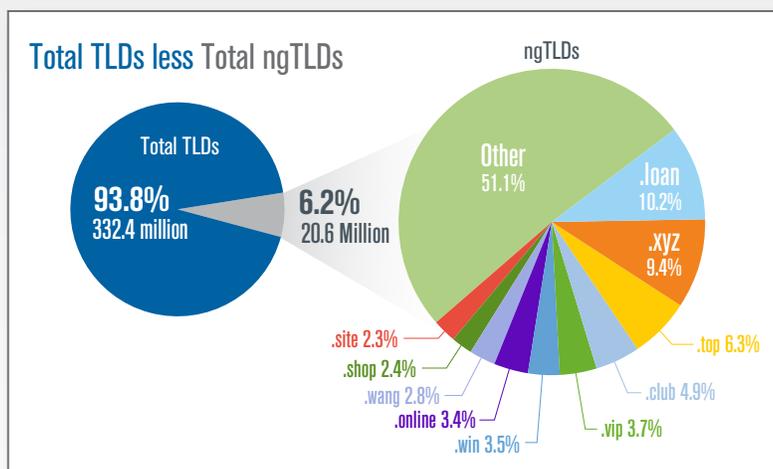
Rank	.com	.net
1	coin	coin
2	crypto	crypto
3	bit	bit
4	block	block
5	chain	bitcoin
6	bitcoin	coins
7	coins	blockchain
8	marijuana	currency
9	blockchain	email
10	currency	cryptocurrency



NEW gTLDs AS PERCENTAGE OF TOTAL TLDs

Source: Centralized Zone Data Service, Q4 2017 and Zooknic, Q4 2017

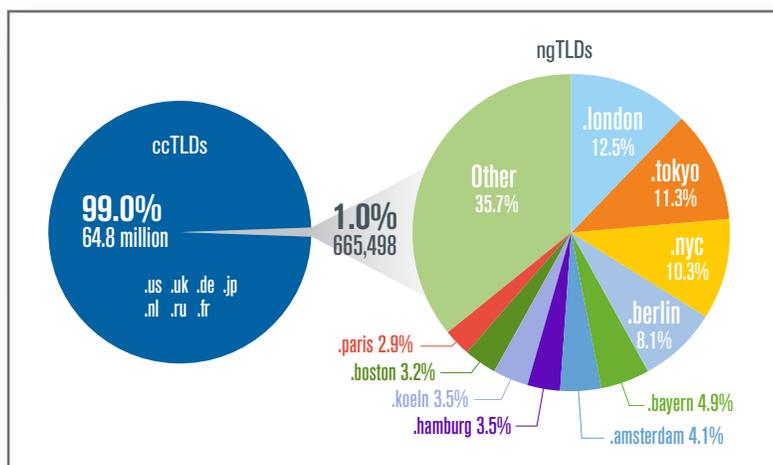
As of Dec. 31, 2017, total new gTLD (ngTLD) domain name registrations were approximately 20.6 million or 6.2 percent of total domain name registrations across all TLDs. This is a decrease of approximately 0.5 million domain name registrations, or 2.4 percent, compared to the third quarter of 2017. ngTLDs decreased by approximately 5.0 million domain name registrations, or 19.5 percent, year over year. The top 10 ngTLDs represented 48.9 percent of all ngTLD domain name registrations. The following charts show ngTLD domain name registrations as a percentage of overall TLD domain name registrations, and also the top 10 ngTLDs as a percentage of all ngTLD domain name registrations for the fourth quarter of 2017.



GEOGRAPHICAL NEW gTLDs AS PERCENTAGE OF TOTAL CORRESPONDING GEOGRAPHICAL gTLDs

Source: Centralized Zone Data Service, Q4 2017 and Zooknic, Q4 2017

As of Dec. 31, 2017, there were 39 ngTLDs delegated that meet the following criteria: 1) has a geographical focus and 2) has more than 1,000 domain name registrations since entering general availability (GA). The chart on the left summarizes the domain name registrations as of Dec. 31, 2017 for the listed geographical ngTLDs and the corresponding ccTLDs within the same geographic region. In addition, the chart on the right highlights the top 10 geographical ngTLDs as a percentage of the total geographical ngTLDs.



ABOUT VERISIGN

Verisign, a global leader in domain names and internet security, enables internet navigation for many of the world's most recognized domain names and provides protection for websites and enterprises around the world. Verisign ensures the security, stability and resiliency of key internet infrastructure and services, including the .com and .net domains and two of the internet's root servers, as well as performs the root-zone maintainer function for the core of the internet's Domain Name System (DNS). Verisign's Security Services include Distributed Denial of Service Protection and Managed DNS. To learn more about what it means to be Powered by Verisign, please visit Verisign.com.

LEARN MORE

To view the average daily number of queries Verisign processes, please go to the "What We Do" section at Verisign.com.⁶ To access the archives for the Domain Name Industry Brief, please go to Verisign.com/DNIBArchives. Email your comments or questions to domainbrief@verisign.com.

METHODOLOGY

The data presented in this brief for ccTLDs, including quarter-over-quarter and year-over-year metrics, reflects the information available to Verisign at the time of this brief and may incorporate changes and adjustments to previously reported periods based on additional information received since the date of such prior reports, so as to more accurately reflect the growth rate of domain name registrations of the ccTLDs. In addition, the data available for this brief may not include data for all of the 302 ccTLD extensions that are delegated to the root, and includes only the data available at the time of the preparation of this brief. For gTLD and ccTLD data cited with Zooknic as a source, the Zooknic analysis uses a comparison of domain name root zone file changes supplemented with Whois data on a statistical sample of domain names, which lists the registrar responsible for a particular domain name, and the location of the registrant. The data has a margin of error based on the sample size and market size. The ccTLD data is based on analysis of root zone files. For more information, see ZookNIC.com.

⁶ The "What We Do" section is located on Verisign.com under the "About Verisign" tab and under the sub-tab "Overview."

EXHIBIT JZ-49

FEATURE

.com gets company; controversy flares

Naming authority approves seven more domains; some fault selection process



By Patrick Thibodeau

Senior Editor, Computerworld |

NOV 20, 2000 12:00 AM PT

MARINA DEL REY, Calif.

The organization charged with managing the Web's domain name system last week took the historic step of approving seven new top-level domains, a move intended to challenge the dominance of .com, introduce competition and open the domain naming system to new kinds of uses.

But the process - like the ultimate domain selections themselves - was fraught with controversy. The four-day meeting of the Internet Corporation for Assigned Names and Numbers here was at times the face-to-face equivalent of a rancorous series of exchanges on an Internet mailing list.

ICANN is starting the new domain process slowly, calling it a "proof-of-concept" phase and letting only those companies and organizations with strong technical and business plans offer domains and new competition.

The introduction of the new domains - .biz, .info, .name, .pro, .museum, .aero and .coop - will depend on the success of final negotiations with applicants. The new domains therefore may not be available until next summer.

ICANN's long-range plan is to introduce many more domains in the years ahead. Last week's action was "a first giant step for domain-kind," said Esther Dyson, ICANN's outgoing chairwoman.

It's unclear how successful the new domains will be - whether .biz will truly rival .com, or whether industry-specific domains such as .coop, which is meant for cooperatives, will win widespread acceptance. ICANN had received more than 200 proposals for new domains from some 44 applicants, and there was anger over the selection process that eliminated most of them.

"The right to due process should outweigh expediency," said Lou Kerner, a partner at the dotNom Consortium in Pasadena, Calif. The remark was greeted with sustained applause from many of the attendees in a packed hotel ballroom here. Kerner is also CEO of dotTV Corp., a Los Angeles-based company that issues Web addresses using the .tv extension.

Kerner, along with the other applicants, was given three minutes to defend his

top-level domain application before the board. He spent his allotted time **JZ-49** attacking ICANN's process and warning of potential lawsuits from the losers.

Dyson was unsympathetic to Kerner's arguments. "We gave you a chance to speak, and you did not take very good advantage of it," she said. Kerner's plan didn't make the final cut.

Consortium Controversy

Particularly controversial was a proposal by Afilias LLC, an organization that includes 19 registrars, including Herndon, Va.-based Network Solutions Inc., the domain registration unit of VeriSign Inc., to run the registry for a .web domain.

Dyson said the formation of the Afilias consortium could potentially impede competition among domain names. "The whole thing gives me a queasy feeling, is the short way to say it," she said.

In the end, Afilias failed to get the .web domain it wanted. Board member Vinton Cerf, citing the fact that Image Online Design Inc. in San Luis Obispo, Calif., maintains an unofficial .web registry, successfully argued to give Afilias its second choice, .info. Image Online's application to officially operate a .web registry wasn't approved in this round either.

Paul Garrin, CEO of Name.Space Inc., a New York-based company that sought approval for a slew of domains, including .shop and .sucks, said Afilias "should not have been awarded anything in this process [because] they already have market dominance."

Senior Editor Patrick Thibodeau covers Internet of Things, enterprise applications, outsourcing, government IT policies, data centers and IT workforce issues for Computerworld.