

10-1999

The Internet Name Game and the Nonprofit Solution

Roger A. Lohmann

Follow this and additional works at: https://researchrepository.wvu.edu/faculty_publications

 Part of the [Computer and Systems Architecture Commons](#), [Nonprofit Administration and Management Commons](#), [Scholarly Communication Commons](#), and the [Scholarly Publishing Commons](#)

The Internet Name Game And The Nonprofit Solution

Roger A. Lohmann
West Virginia University

Abstract

This paper is a case study of the campaign to create a new internet names authority to handle the assignment of internet domain names. Almost everyone knows by now that the Internet was originally a defense research project, which morphed into a research network for scientists and then into a tool of higher education and eventually into the commercial and general household utility we know today. In terms familiar to nonprofit research community what began in the state sector, expanded into the third sector and then into the market and household sectors and the consumer economy. There is a second and more recent story of the development of the internet, however, which is equally relevant to third sector theory: It is an almost perfect case of a cooperative and workable third-sector solution implemented on a voluntary basis by the members of the Internet Society which was eventually replaced by a government-imposed but unstable market solution. Faced with the need to expand beyond the original limits of the .com domain, the search for new solutions led to a subsequent round of market failures followed by government failure and eventually a return to a non-profit solution, which is currently being implemented (and proved durable for at least the next two decades). This case study explores the familiar dynamics of market failure, government failure and a number of other related issues raised by the case.

Introduction

There was a time just a few short years ago that one might begin a presentation like this with the then-esoteric knowledge that internet addresses were organized into five basic name domains – .edu., .com., .mil., .net and the third sector's own, .org.,. To do so today would be roughly the equivalent of starting off the presentation with a brief discourse on the fact that the day is divided into 24 hours or the year into 12 months. In one of those extremely brief periods of time we have all come to associate with internet developments, the logic of domain names went very quickly from the esoteric knowledge of a small cult of internet early adopters to the stock of conventional wisdom throughout much of the literate world. To be sure, this

Presented at the Annual Meeting, Association for Research on Nonprofit Organizations and Voluntary Action. Washington DC. October, 1999.

knowledge is only skin deep. Everyone may be familiar with conventional internet addressing schemes which begins with www (for World Wide Web) and ends with one of the familiar domain names. However, the accompanying knowledge of IP (internet protocol) addresses remains in the esoteric knowledge category and the topic of internet protocols remains almost the exclusive concern of those with some background in electrical engineering. Even more within the realm of electronic magic for most users is the vast and complex network of organizations – firms, government bureaus, associations, collaboratives,

For most of the last two years, many of the cognoscenti affiliated with these various organizations have been locked in an elaborate and pitched series of political conflicts over who will control the assignment and disbursal of IP addresses, domain names and internet protocols. These events offer a case study which is one of the most telling confirmations of “failure theory” as it has evolved in nonprofit economics. Beginning with one of the truisms of privatization, the Clinton Administration began moving a number of years ago to divest the U.S. government of responsibility for managing “the internet.” One major step in this effort was to move the trunk lines that form the backbone of the internet entirely into private control. Another major step was initiated in 1997 as the Clinton Administration proposed shifting the registry of internet domain names from a single vendor, which operated the registry as a monopoly under contract to the U.S. Commerce Department, to a system of multiple, competing vendors. Part of the plan included opening up a number of additional, new name domains. Information regarding United States government efforts to privatize the management of the domain name system and increase competition in domain name registration services is available at www.ntia.doc.gov. Among the possibilities mentioned were .bus, and a range of country codes like .us .

A search on Excite using the keyword .org turned up 105,671 hits on October 14, 1998. A search on Alta Vista less than one year later on September 11, 1999 turned up 9,877,9533, while a search on Excite using the same keyword turned up 107,055 hits at the same time.

Background

It was back in the 1970's that DARPA-funded research on packet switching networks, and TCP-IP addressing had already been implemented on ARPANET by 1983. In 1990, Tim Berners-Lee, a computer scientist at the European Laboratory for Particle Physics (CERN) wanted to enable particle physicists to work collaboratively in research institutes scattered around the world. His solution was the World Wide Web - a global publishing system based on an innovative system of associative linking. Lee is generally credited with demonstrating the first browser and also for creating the HyperText Transfer Protocol (HTTP) and HyperText Mark-Up Language

(HTML). Lee is an Oxford University graduate who is now at MIT and directs the W3 Consortium, one of the many nonprofit entities in the third sector of cyberspace.

The Internet of the early 1990s was a text and menu driven file sharing system that was hostile to all but the most hardened military or academic technophiles. It was also an almost pure case of a commons (Lohmann, 1992; Lohmann, 1994). Berners-Lee sought to create a collaborative of scientists, unconcerned with control or profit, would share electronically everything that scientists have always sought to share by more primitive pre-electronic means. Management of the internet is currently in the hands of four nonprofit organizations: The Internet Architecture Board (IAB), the Internet Engineering Task Force (IETF), the Internet Society (ISOC) and the Internet Assigned Numbers Authority (IANA).

A standard IP address is 32 bits (4 bytes) and can be divided in several ways between network and host. These are divided into four parts (A-B-C-D). A class B address (university level) can be divided into 256 subnets with 254 addresses each. Subnetting allows an organization to subdivide its addresses into administratively separated subnetworks. This raises the question of what to allocate. The internet would have run out of B addresses already in 1995 if the original ARPANET scheme for TCP/IP had remained in place. If C addresses were allocated instead, it would have caused network router tables to overflow. Even with the fixes currently in place, eventually we will run out of Internet addresses with the current schema. Part of the solution is thought to reside in new domains.

Routers, gateways, packet filters, firewalls, translators, DNS (Domain Name Service) DHCP (Dynamic Host Configuration Protocol) Email,

Part of the solution is in private address space, allocated by organizations for company intranets. These networks will not be routed on the internet.

The design goals of IPv6 (Internet Protocol version 6) were to support billions of hosts; reduce the size of the routing tables; simplify headers so packets were processed faster; better security; allow future protocol evolution; allow multicasting; permit new and old protocols to coexist; allow a host to roam without changing addresses; authentication and privacy, etc.

Trade Associations

The simplest and most straightforward examples of the role of nonprofit organizations in the computer industry are those that are characterized by the standard trade associations, found throughout the world of business. "Since 1993, Network Solutions, Inc. (NSI), has been the only provider of domain name registration services in the .com, .net and .org top-level domains pursuant to a cooperative agreement with the United States

Government. In October 1998, that cooperative agreement was amended to reflect NSI's commitment to develop a protocol and associated software supporting a system that permits multiple registrars to provide registration services within .com, .net and .org -- known as the Shared Registration System.

Five new registrars - in addition to NSI - will be accredited to register domain names in .com, .net, and .org during a two month "testbed" period currently scheduled to begin this month. More registrars are expected to provide domain name registration services after the test period is over. The U.S. Government expects that competition in domain name registration will provide the global Internet community with a number of benefits, including greater choice in services and prices."

(<http://www.networksolutions.com/internic/internic.html>)

The registrar accreditation process was to be conducted by the Internet Corporation for Assigned Names and Numbers (ICANN). ICANN was a not-for-profit corporation formed by the global Internet community to assume responsibility for certain Internet domain name system functions, as set forth in the U.S. Government's Statement of Policy ("White Paper").

The Green Paper

On January 30, 1998, the U.S. Commerce Department released a draft proposal (known as the Green Paper) to create "up to five" new domain names. The proposal calls on NSI to immediately separate its registry and registrar functions, so that competitors may act as registrars for .com, .net, and .org. The operation of .edu will shift to a not-for-profit organization.

[<http://www.internetworld.com/daily/trends/1998/01/3002-vrml.html?InternetWorld+6032+domain>].

The Green Paper was posted on the Internet for comment on January 30 and appeared in the *Federal Register* on February 20, 1998. By the time the comment period officially closed on March 23, the Commerce Department had received over six hundred fifty (650) comments. All of the comments are available for review on the NTIA web site, and comments received after the deadline were posted in a separate section for "late filers."

In testimony before the House Science Committee's Subcommittee on Basic Research on March 31, 1998, White House Counsel Ira Magaziner said:

Once a tool reserved for scientific and academic exchange, the Internet has emerged as an appliance of everyday life, accessible from almost every point on the planet. Students across the world are discovering vast treasures of data via the World Wide Web. Doctors are utilizing telemedicine to administer off-site diagnoses to patients in need. The Internet is being used to reinvent government and reshape our lives and

communities, and is also changing classic business and economic paradigms.

Last summer, the White House released under President Clinton's name "A Framework for Global Electronic Commerce," which articulated the Administration vision for the emergence of the Global Information Infrastructure as a vibrant, global marketplace. The Framework suggested a set of principles to guide our government's approach to a number of important policy issues including eventually divesting any federal role in directly managing the internet. In keeping with those principles, President Clinton directed Secretary of Commerce William Daley to work to privatize, increase competition in, and promote international participation in the domain name system. Without going further into the details, Magaziner told the committee that the U.S. Government "is seeking to end its role in the domain name system." In its place, he laid out the case for a nonprofit solution to the congressional subcommittee. Based on broad consultation with Internet stakeholders, the Green Paper cites several principles for DNS that are said to be shared by most Internet stakeholders. These principles are:

- 1) Stability. The USG should end its stewardship of the DNS in a responsible manner, which above all else, means ensuring the stability of the Internet;
- 2) Competition. Where possible, market mechanisms that support competition should drive DNS management;
- 3) Private, Bottom-Up Coordination. Private-sector coordination of DNS management is preferable to government control; and
- 4) Representation. Technical management of the Internet should reflect a diversity of Internet users both functionally and geographically.

For the Internet to run smoothly, some functions should be performed on a coordinated, centralized basis. These are:

- 1) the management of IP addresses;
- 2) the coordination and management of the Internet root servers;
- 3) the dissemination and management of protocol parameters for Internet addressing.

To manage these functions, the Clinton White House proposed the establishment of a new private, nonprofit corporation that would act 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 IP number blocks;
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.
4. To register Internet technical parameters related to IP numbers and DNS.

In his testimony to the committee, Magaziner also made several additional comments about the board and the management of the new nonprofit:

The new corporation board of directors should be balanced and represent the functional and geographic diversity of the Internet. We suggest that a representative board members could be drawn from the existing internationally representative IP number registries (ARIN, RIPE and APNIC), the Internet Architecture Board (IAB) (an international board representing the Internet technical community), an international membership association representing domain name registries and registrars (to be created).

We also suggest that the new corporation would hire a CEO with a background in business administration to bring more rigorous management to the coordination of Internet functions.

Also testifying on March 31, 1998 was Barbara Dooley, Executive Director of the Commercial Internet Exchange Association (CIX) and seven other industry trade association partners: the Arizona Internet Access Association (AIAA), Association of Online Professionals (AOP), the Canadian Association of Internet Providers (CAIP), the Iowa Internet Provider Association (IIPA), the Internet Service Provider Consortium (ISP/C), the Texas Internet Service Providers Association (TISPA), Washington Association of Internet Providers (WAISP).

Dooley testified that CIX was founded in 1991 and is the oldest trade association of Internet service providers (ISPs). With a global membership of more than 700 companies in North America, Europe, and the Asia-Pacific regions. She characterized the rule as "on the whole, fair, reasonable, practical, and well conceived," but held out five reservations, only one of which is of immediate concern here.

Commercial users and service providers would be seriously under-represented on the board of directors of the new non-profit entity even though they will be the critical factor in the success of electronic commerce on the Internet. An effort should be made to increase their board representation.

Another speaker, Professor David Farber, offered a textbook example of the "interlocking directorates" issue which has long concerned nonprofit and community thinkers. In describing his credentials for the committee, Farber said:

I am the Moore Professor of Telecommunications at the University of Pennsylvania, where I direct the Center for Communications & Information Science & Policy. In addition, I am a member of the Presidential Advisory Committee on High Performance Computing and Communications, Information Technology and Next Generation Internet.

I am a long time member of the Board of Directors of the Electronic Frontier Foundation (EFF) and a member of the Board of Trustees of the Internet Society (ISOC). I am also a Fellow of the Center for Global Communications of Japan (GLOCOM).

Also testifying was Jim Courter, on behalf of the Swiss-based Council of Registrars (CORE). Courter, a former member of Congress, told the committee that CORE is a nonprofit membership association currently composed of 87 companies, including 24 United States registrars with a presence in more than 100 American cities. "CORE originated as a result of a plan initiated in 1996 by the Internet Society and the Internet Assigned Numbers Authority (IANA) to add new structure, free enterprise, and competition to the Internet Domain Name System (DNS), the system that attaches Top Level Domains such as .com to Internet addresses. CORE not only meets an important need, it meets the highest standards. CORE operates within the Internet governance framework of a global Memorandum of Understanding, signed on May 1, 1997, by IANA and the Internet Society. Since then, it has been signed by more than 200 organizations.

CORE and the majority of the Internet community believe TLD monopolies are bad for consumers, and bad for the Internet. This is reflected in the voluminous comments filed on the Ira Magaziner Plan, also known as the "green paper."

In a list of perceived differences with the Clinton administration plan, Courter seems to suggest CORE's willingness to go even further than Magaziner indicated in also creating the registries as nonprofits rather than for-profit companies:

CORE supports the operation of not-for-profit registries in the public trust. The Magaziner Plan does not.

Courter characterizes the administration plan as:

It creates new, unregulated monopolies for single Top Level Domains (TLDs), with the potential for price-fixing and gouging, rather than creating not-for-profit registries to operate in the public trust with multiple TLDs.

He then added:

The solution is not monopolies. The solution is creating a not-for-profit registry with a Shared Registry System (SRS) that provides its services on a cost-recovery basis. CORE, the Internet Society, Educom, European

Union and many other organizations believe Registries should be operated as non-profit and in the public trust.

Since registries are largely administrative, back-office operations, there is no need to compete. They have little, if anything, to offer in added value for customers, since customers would deal with registrars as opposed to registries.

If a registry is operated as a non-profit organization and with a Shared Registry System (SRS) for multiple domains, users could shop among registrars for the best prices and service.

The CORE model puts power in the hands of the consumer, instead of in the hands of the Magaziner Plan's monopoly for-profit registries. The non-profit registry runs on a cost-recovery basis and registrars compete on the price and efficiency of their administrative work and any other services that provide added value.

Courter also summoned up at least a weak version of the cyber-democracy vision behind this statement:

The Internet is perfectly capable of managing its own affairs through global consensus and cooperation, with the support of existing volunteer organizations, industry organizations, task forces, and societies. CORE has developed a 10-point plan that will enable the federal Government to achieve its stated goals efficiently, effectively, quickly, with minimum interference, and within the spirit of global consensus.

In his concluding comments, Courter said:

The federal Government can ensure the rapid transition to competition and greater choices for users everywhere. If the United States government wants to influence the development of the Internet, it should be through the all-American principles of the free market and democratic values, not through government intervention.

It can provide leadership in creating a new system with not-for-profit Registries and broad choices of domain names immediately available in a competitive environment, so users can choose a registrar just as they choose an Internet provider or long-distance company.

The Internet Council of Registrars, which had been proceeding with its own plan to introduce seven new Top Level Domains (TLDs), was left in limbo by the government's proposals. The Electronic Freedom Foundation, in very sharp terms, charged NSI with deliberately trying to steal the public resource of domain names, and recommends that NSI not be allowed to manage the root or control any TLDs in the future. Another staunch critic of the Administration plan was the European Union (EU) which opposed the continued and seemingly excessive U.S. control over the internet.

On June 5, 1998, the National Telecommunications and Information Administration ("NTIA") of the United States Department of Commerce issued a policy statement, commonly known as the "White Paper," in which NTIA called on private sector Internet stakeholders to form a not-for-profit corporation to administer policy for the Internet name and address system.

That entity is to be named The Internet Assigned Numbers Authority (www.iana.org). Its takeover of responsibility for assigning internet addresses was originally to have begun by September, 1998, but is now scheduled to be phased in during April-May, 1999. Network Solutions, Inc., Herndon VA www.netsol.com has previously held a lucrative legal monopoly with the U.S. government since 1993. NSI has administered more than 2.3 million domain names in .com, .net, .org, and .edu domains (Murphy, 1998)

Nationalism: Competitors include NetNames UK, an international domain names registry and.

Another player in the issue was the International Trademark Association (www.inta.org), which has a nonprofit propaganda ministry named the Brand names Education Foundation (www.bnef.org)

Meanwhile, a brisk on-line trade in domain names has evolved. One company offers the opportunity to "Register a Domain Name with Internic in Minutes." for as little as \$14.99. <www.1minutedomains.com Another www.checkdomain.com offers itself as the only place to check domain names for every country in the world. All together, a September, 1999 search on the terms "domain names" turned up 40 different sites.

Conclusion

The nonprofit Internet Corporation for Assigned Names and Numbers (ICANN) assumed responsibility for managing domain names on September 18, 1998 and did so for the next 21 years. At that point, formal authority was ceded to an international governance scheme, the global multistakeholder community.

References

- Lohmann, R. A. (1992). *The commons : New perspectives on nonprofit organizations and voluntary action*. San Francisco: Jossey-Bass.
https://researchrepository.wvu.edu/faculty_publications/754
- Lohmann, R. A. (1994). *The Internet As Commons*. Proceedings from Association for Research on Nonprofit Organizations and Voluntary Action, Berkeley, California.
https://researchrepository.wvu.edu/faculty_publications/1107
- Murphy, K. (1998). Network Solutions' Monopoly Extended Into Mid-1999. *Internet World*, 4(33), 1.