Domain Name Solution Causes New Problems

Neal Leavitt

Last year, the US government came up with a plan it hoped would settle the ongoing controversy over the Internet's domain-name registration system.

In response to the heated controversy, the US Department of Commerce sanctioned formation of a nongovernmental, nonprofit agency to manage a newly privatized and competitive system for registering, coordinating, and maintaining Internet domain names.

The agency, the Internet Corporation for Assigned Names and Numbers (http://www.icann.org), was formed to oversee the allocation and management of domain names by the organizations that register those names. ICANN also oversees management of the root-server system, which contains the master list of top-level domain names.

However, the formation of ICANN has launched new controversies.

For example, ICANN is short of money and is operating at a deficit. In addition, some organizations contend that ICANN is assuming too much power without accountability and is not operating with the consensus of the global Internet community.

ICANN is short of money and has generated controversy in a number of areas.

Meanwhile, ICANN has been unable to resolve some of its disputes with Network Solutions, the company that used to be the sole registrar of domain names and whose database contains about 75 percent of the world's domain names. Thus, the planned transition of control from Network Solutions to ICANN has been slow, even though five new domain-name registrars have been approved to begin competing with Network Solutions.

In fact, some organizations are complaining that Network Solutions is deliberately dragging its feet. The company denies this.

This has created doubts about ICANN and the new domain-name system (DNS), which was designed to resolve complaints that the previous system was monopolistic and too US-centric, had too much government involvement, and couldn't keep up with the rapid growth of both the Internet and the demand for domain names. (See the sidebar, "What's in a (Domain) Name?")

The issue is important because a properly run DNS is a key to the ability of Internet users to register unique domain names and communicate with each other.

In addition, there's considerable money in the domain-name-registration market. The Internet Software Consortium's July 1999 Internet Domain Survey found that there are currently 56.2 million Internet hosts. As shown in the figure on page 13, Hambrecht & Quist, a technology investment banking firm, projects the number of domain-name registrations will increase more than five times during the next three years, topping 32 million by 2002. By this time, revenue generated by domain-name registrations will increase to $2 billion.

However, said Audrey Apfel, a senior analyst for the Gartner Group, a market analysis firm, "Control of the DNS is in transition. It's causing a lot of turmoil and consternation within stakeholder circles, such as network service providers, carriers, domain-name-registration providers, large corporations, and governments."

Discussions are ongoing among ICANN, Network Solutions, and the Department of Commerce. Meanwhile, US Representative Thomas Bliley of Virginia (where Network Solutions is located) has also held periodic hearings on the issue.

Interested parties are concerned that the current controversy will delay the planned benefits of the newly privatized DNS or perhaps cause the US government to step in and run the system again.

However, said Carl Howe, corporate infrastructure research director for Forrester Research, a market research firm, "We won't and can't have an untenable mess at the end of the day. The major players will come to terms."

ICANN'S FINANCIAL PROBLEMS

ICANN, which has a $5.9 million budget this fiscal year, is operating with a deficit of about $800,000, according to

Michael Roberts, the organization's interim president and CEO.

Roberts noted that ICANN has only about $100,000 in the bank, has been unable to pay some of its bills, and has no contingency fund.

Also, he said, "The budget deficit . . . is deferring our ability to hire staff called for in our original budget."

Roberts noted that expenses have been about 10 percent higher than expected, although he said he would not provide specific expenditure figures until accountants finish calculating this information.

Meanwhile, ICANN continues to experience a revenue shortfall. For example, only two of the five new accredited domain-name registrars, the Council of Internet Registrars (Core) and Melbourne IT, have paid ICANN the $5,000 annual registrar fee and additional money for each domain name they have registered.

Roberts said that the other three new registrars haven't made payments and that he doesn't know when they will do so.

Meanwhile, the Department of Commerce convinced ICANN to scrap plans to charge registrars $1 for every new domain name, which was expected to generate $5 million in revenue. The plan was dropped after such opponents as Network Solutions and Congressman Bliley complained that the fee was developed and approved without public input.

Meanwhile, Roberts said, "Our expectation last winter was that private dona-

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What's in a (Domain) Name?

In the early days of the Internet, volunteers from the academic and research communities maintained Internet directories and root servers, which contain the master list of top-level domain names. In the early 1990s, when Internet use began to grow rapidly, the US National Science Foundation awarded a contract to three private companies to run the domain-name system (DNS).

The NSF gave Network Solutions the exclusive contract to maintain the master domain-name directory and register domain names ending in .com (businesses), .org (nonprofit organizations), and .net (network service providers).

In September 1995, the NSF gave Network Solutions permission to charge $100 to register a domain name for two years and $50 per year thereafter to renew the name. Network Solutions gave 30 percent of the revenue to the NSF and kept the rest after paying expenses.

This became big business as the number of registrations skyrocketed in the second half of the 1990s. Through June 1999, Network Solutions registered about 5.3 million domain names, about 75 percent of all names.

For the second quarter of 1999, the company's net revenue was $47.5 million and its net income was $5.8 million, both 132 percent increases over the $20.5 million in net revenue and $2.5 million in net income it received during the same period in 1998.

ICANN: A new approach

Over time, a number of Internet users and would-be domain-name registrars began complaining that the NSF's system unfairly gave Network Solutions a monopoly in the registration business, was overly dominated by the US government and US users, and could not keep pace with the Internet's exploding growth.

In 1996, a number of Internet administrative agencies formed the Internet Ad Hoc Committee (IAHC) to solve these problems. After several false starts, the IAHC came up with a plan that led to the formation of the Internet Corporation for Assigned Names and Numbers (ICANN). The US Department of Commerce authorized ICANN to begin operations on 25 November 1998.

The organization's principal role in the Internet, said ICANN chair Esther Dyson, is to "govern the plumbing, not the people. It has a very limited mandate to administer certain [largely technical] aspects of the . . . DNS in particular."

ICANN represents a new approach to the DNS, as it is largely autonomous from the US government.

According to ICANN interim president and CEO Michael Roberts, "Our board of directors is answerable to the Internet community through the mechanism of bylaws and its Articles of Incorporation, which provide for elections [of directors] and independent review."

Registrar requirements

ICANN has set financial requirements for organizations seeking accreditation as registrars. Organizations must have a minimum of $70,000 in working capital, post a $100,000 perfor-

mance bond, have commercial liability insurance of at least $500,000, pay $10,000 to Network Solutions for the software the company designed to let registrars access its domain-name database, and pay an annual fee of $5,000 to ICANN.

Registrars also must have the capability to provide robust and scalable domain-name registration services, a global real-time Web-based interface, and a WHOIS program and database that let users access registrar information.

Meanwhile, each registrar must escrow an electronic copy of its registration database, for use in case it leaves the registration business or loses its accreditation.

Termination

ICANN can terminate a registrar's accreditation with 15 days' notice if it is in breach of its agreement with ICANN, makes material misrepresentations, or becomes bankrupt or insolvent. Registrants can appeal termination to any arbitration body agreed upon by both sides, or they can sue.

New registrars

So far, ICANN has accredited five new registrars: America Online, the Council of Internet Registrars (Core), France Télécom/Oléane, Melbourne IT, and Register.com. ICANN has also chosen 52 companies for future accreditation.

Under the newly privatized DNS, domain-name registrars can charge registrants whatever the marketplace will bear. Most charge between $70 and $119 per name for the first two years.

Statistics from and predictions by Hambrecht & Quist indicate that the rapid growth in domain-name registrations will continue at least through 2002.

tions would cover our start-up costs, but they didn't."

The Department of Commerce has not provided any additional funding to make up the resulting shortfall, but ICANN has negotiated $825,000 in unsecured loans from several companies, including Cisco Systems and 3Com.

Meanwhile, Roberts said, "We have about $100,000 in contributions promised to us this fiscal year and are hopeful that the board of directors will adopt some permanent funding mechanism at our November meeting. We believe the financial situation will improve very soon."

"They won't run out of money, but ICANN's financial problems are hurting their effectiveness," said Barbara Dooley, president of the Commercial Internet Exchange, an international association of Internet service providers. "It's important that the private sector take the initiative here, or the alternative is more government regulation."

DISPUTE WITH NETWORK SOLUTIONS

To accelerate the start of a competitive DNS, the Department of Commerce originally hoped to resolve all transition-related issues between ICANN and Network Solutions by 26 April 1999. However, this deadline has slipped several times. And, noted associate administrator Beckwithy Burr of the Department of Commerce, a number of substantive issues are still under discussion.

Meanwhile, as new domain-name registrars began operation, said Ken Stubbs, chair of Core, Network Solutions "was not as cooperative as we felt they should be."

Christopher Clough, Network Solutions' vice president of corporate communications, disagreed and said the DNS transition has been smooth. He said the company generally has been working with five new proposed registrars each month.

Nonetheless, he said, "There are a lot of technical and administrative hurdles [for registrars]. . . . How fast they become operational depends on the maturity and robustness of each company getting into the business."

If differences of opinion cannot be resolved, Clough said, it is unlikely the Department of Commerce would or
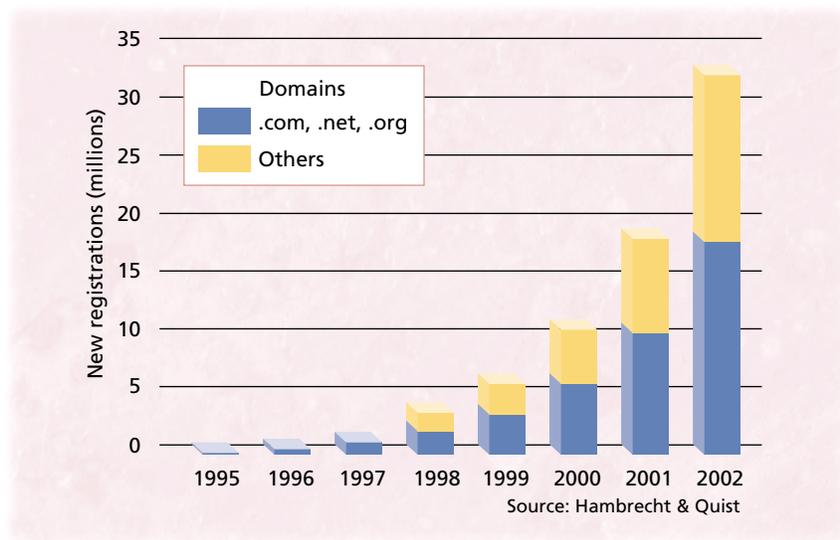
legally could unilaterally end the company's contract to register domain names.

However, Burr said, the department could put the contract out to bid and award it to another company if one underbid Network Solutions.

Control of the domain-name database

Network Solutions' database currently contains about 75 percent of the world's domain names, based on the users it exclusively registered between 1 April 1993 and 26 April 1999. Because Network Solutions' database contains so much important information, it is a critical part of operating the DNS effectively.

According to Burr, the Department of Commerce has the right to use the database and let other registrars use it because Network Solutions compiled the information as a contractor for the government.

However, Network Solutions claims it owns the database, based on its original domain-name registration agreement with the US National Science Foundation (NSF). "We created the system, and our legal counsel has indicated that this development work becomes [our] property," Clough said.

While this dispute has taken place, Network Solutions has let new registrars obtain domain-name-registration information from its database, for $9 per name.

The issue could come to a head on 30 September 2000, when the test phase of the new DNS is supposed to end and

ICANN is supposed to begin fully independent operations. However, Burr said she expects the conflict to be resolved long before then.

Temple University School of Law professor David Post said Network Solutions' original contract with the NSF did not specify who would own the company's database on a long-term basis.

Meanwhile, he said, both sides in the dispute have good arguments, so a court case on the issue could be complex.

Accreditation agreement

Network Solutions has refused to sign ICANN's accreditation agreement.

Richard Forman, CEO of new registrar Register.com, said, "It's imperative that all registrars, including Network Solutions, work under the same contractual rules and obligations. The company refuses, asserting that it doesn't agree with ICANN's terms. But until Network Solutions recognizes ICANN's authority, the entire [domain-name] process and the further growth, development, and stability of the Internet may be in jeopardy."

However, Network Solutions insists it isn't required to sign ICANN's accreditation agreement because of the company's original domain-name registration contract with the US government.

Also, Clough said, Network Solutions doesn't officially recognize ICANN's authority. Furthermore, he said, although Network Solutions believes there is a need for ICANN, the company won't sign any agreement that gives ICANN the right to terminate its domain-name-registration license.

Dot Com Directory

Network Solutions caused additional controversy recently when it launched the Dot Com Directory (http://www.dotcomdirectory.com), which lets users find information about businesses on the Web. Customers that register domain names with Network Solutions are listed in the directory for free. Other companies pay $119 per year.

The Department of Commerce and some registrars say Network Solutions is trying to obtain an unfair advantage by leveraging control of its large database to market the Dot Com Directory and to convince businesses to use its registration services.

Register.com's Forman said that for true competition to take hold in the domain-name-registration business, all registrars must operate on a level playing field.

He said, "The fact that Network Solutions is trying to use what is essentially government property to give them a competitive edge is contrary to the spirit of competition."

CONCERNS ABOUT ICANN

While some in the Internet community have criticized Network Solutions for its actions regarding the new DNS, ICANN has also generated some concern.

For example, Network Solutions and various nonprofit and consumer groups, such as Ralph Nader's Consumer Project on Technology, have criticized ICANN for conducting closed-door meetings.

ICANN relented recently and opened up most of its sessions at August's meetings in Santiago, Chile. ICANN promises to do the same at its next set of meetings in November in Los Angeles.

Meanwhile, Temple University's Post said ICANN might perpetuate the problems attributed to the previous DNS, in which Network Solutions was the only registrar. "It's simply transitioning from a [Network Solutions] monopoly to one that may be controlled by ICANN," he said.

The new DNS could have more problems because ICANN will manage the registration of all domain names, whereas Network Solutions controlled only names ending in .com, .org, and .net.

ICANN may use its power wisely, he said, but it might also exercise control for its own benefit.

James Love, the Consumer Project on Technology's director, said ICANN wields too much power and authority, lacks accountability, and will become a magnet for making policy on issues not included in its original mandate, such as the use of trademarked names in domain names.

However, a major industry trade organization, the Information Technology Association of America (ITAA), is a staunch ICANN supporter.

"The controversy is overblown and is more about personalities than sub-

stance," said ITAA president Harris Miller. "We'll reach a workable [DNS] solution because if the private sector can't pull this off, it throws into doubt its ability to lead in other issues."

"The failure of ICANN will give weight to the arguments of those who want extensive government regulation of the Internet and claim that the industry is not capable of meaningful self-governance," he said.

Government regulation would slow the Internet's growth, as it has done with other technologies such as telecommunications, he said.

Register.com's Forman said that while perhaps not providing the perfect solution, "ICANN did indeed reflect workable compromises acceptable to a large majority of interested parties representing individuals, corporations, industry trade groups, and not-for-profit organizations."

Roberts said ICANN's ability to man-age the domain-name system depends on and is based on consensus by the Internet community. He said ICANN's bylaws promote consensus by providing for the formation of groups, made up of members of the Internet community, that will assist, review, and develop policy recommendations regarding domain names, IP addresses, and the assignment of parameters for Internet protocols.

ICANN, Network Solutions, and the Department of Commerce are meeting regularly in an effort to settle the controversy over the new DNS and to establish some stability in the system.

Meanwhile, short-term delays in stabilizing a new DNS could delay the improvements that privatization was supposed to bring to the DNS.

And in the long run, said Temple University's Post, "There is a chance that ICANN could fail, and the government would be compelled to stamp its imprimatur on the [domain-name] process."

Perhaps the worst-case scenario is for the DNS to splinter into incompatible parts, with users unable to easily access all domains. However, observers say the Internet community won't let that happen.

Register.com's Forman agreed but said the next 12 months will be bumpy. He said, "All of the [Internet's] governing bodies and participants have to reach consensus and create a level playing field. Right now it's still like a game of chicken to see who will move first. But the end result will foster fair competition." ❖

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