

ICANN Contributions to IPv6 and the Root Servers

David Conrad

<david.conrad@icann.org>

Vice President of Research & IANA Strategy

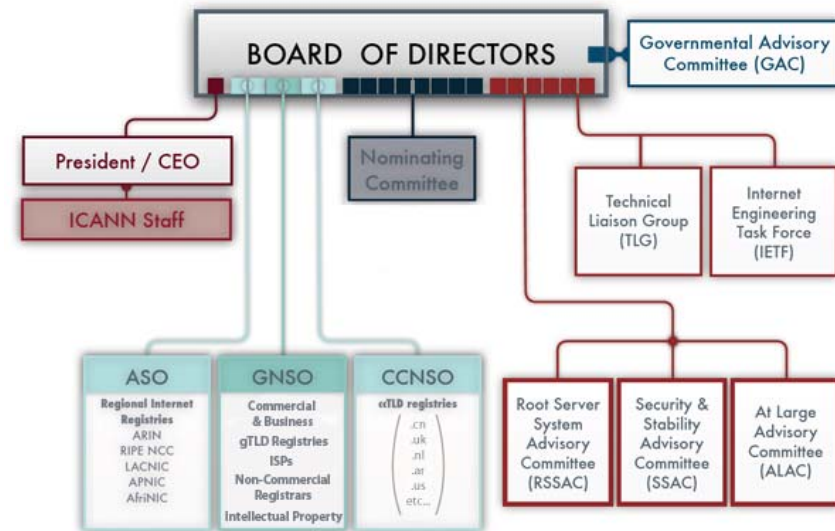
ICANN

Overview

- ▶ About ICANN and IANA
- ▶ ICANN and IPv6
- ▶ IPv6 and the Root Servers
- ▶ Summary

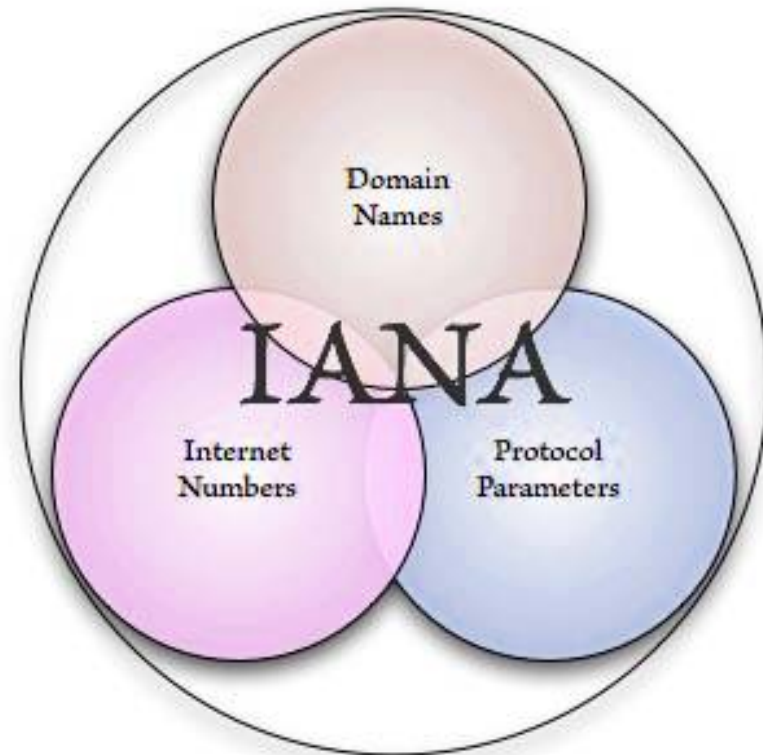
About ICANN

- ▶ Established as a result of US government action in 1998 as “an internationally organized not-for-profit public benefit corporation”, incorporated in the US
 - ▶ Headquarters in Marina del Rey, US
 - ▶ Offices in Brussels, BE, and Sydney, AU
- ▶ Responsible for overseeing the administration of Internet unique identifiers
 - ▶ Through the “IANA Functions” contract with the US Dept. of Commerce



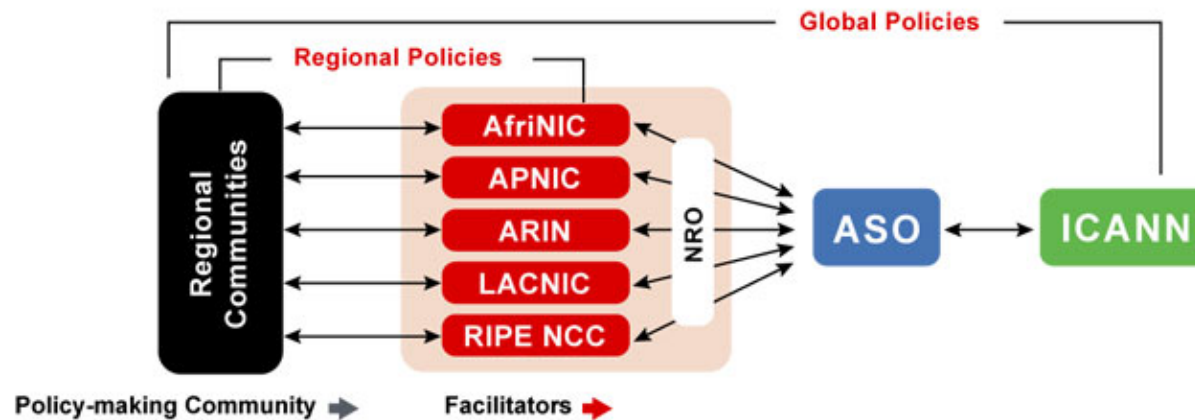
About IANA

- ▶ Internet Assigned Numbers Authority
 - ▶ “Established” in the early ’70s but never had an independent existence
 - ▶ Originally part of U.S. Dept. of Defense Advanced Research Projects Administration (ARPA) contracts
 - ▶ Became a function of ICANN under contract to the US Dept. of Commerce when ICANN was created
 - ▶ Originally very informal and ad hoc
 - ▶ At the beginning, personal relationships with Jon Postel (“the IANA”) drove most interactions
 - ▶ Focus was on getting the job done, not on formalisms
 - Continuing repercussions as the Internet itself formalizes
- ▶ Resource manager for the top-level of most Internet related resources
 - ▶ Domain names
 - ▶ Delegates top-level domains
 - ▶ Manages the root zone
 - ▶ Internet Addresses (IPv4 and IPv6)
 - ▶ Allocates blocks to the RIRs
 - ▶ Protocol Parameters
 - ▶ Assigns values at the direction of the IETF



ICANN and IPv6 Policy Setting

- ▶ ICANN, through IANA, provides top-level allocation services for the Regional Internet Registries (RIRs)
 - ▶ Allocation policies defined in a bottoms-up process
 - ▶ Anyone may submit a policy proposal via the RIR public policy forums.
 - ▶ Each RIR must ratify an identical version of the policy
 - ▶ The policy is then referred to ICANN's Address Supporting Organization (ASO) which reviews the policy
 - ▶ After review, the ASO passes the policy to ICANN's board for ratification
- ▶ IPv6 global policy:
 - ▶ <http://www.nro.net/policy/iana-rir-ipv6-allocation-proposal.html>



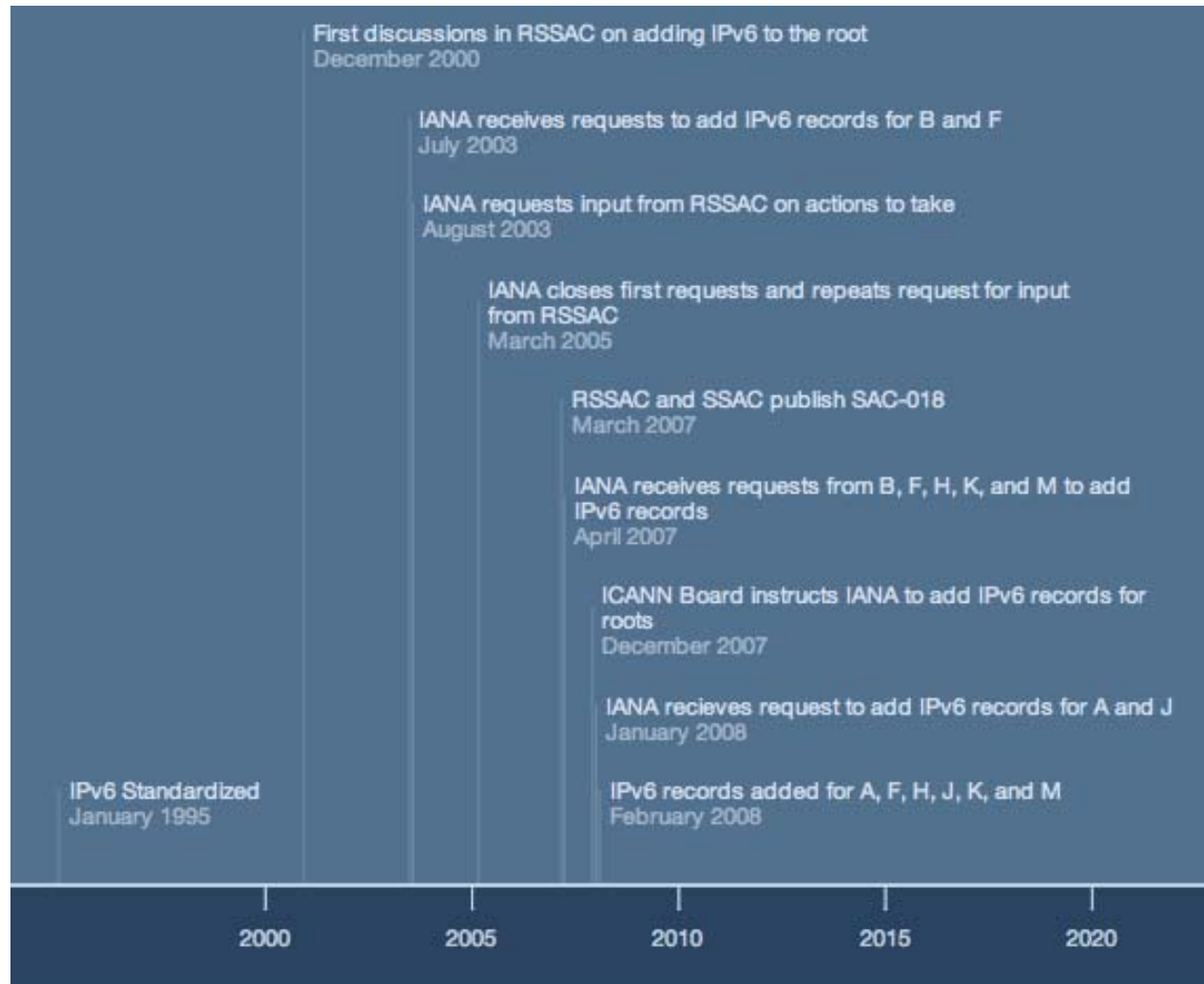
ICANN's Role in IPv6

- ▶ As the coordinator of global Internet resources, ICANN's role is quite limited
- ▶ ICANN can
 - ▶ Work with top-level domain name administrators to encourage those registries to support IPv6
 - ▶ Work with DNS registrars to encourage IPv6 support for registrants
 - ▶ “Lead by example” by deploying IPv6 in both ICANN and IANA function systems
- ▶ ICANN can't
 - ▶ Force anyone to deploy or use IPv6

IPv6 and the Root Servers

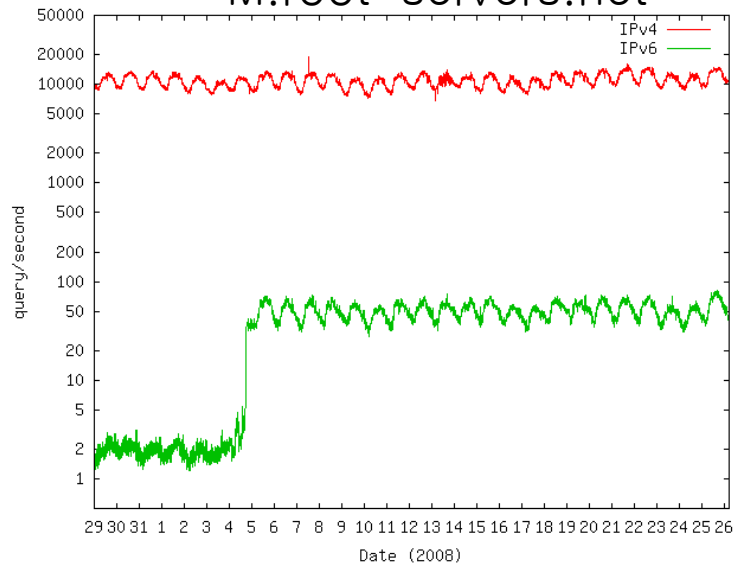
- ▶ ICANN administers the DNS root zone
 - ▶ Through the IANA functions contract
- ▶ ICANN does **not** administer the root servers
 - ▶ 12 independent organizations (of which ICANN is one)
- ▶ Adding support for IPv6 to the root servers required:
 1. Making absolutely sure breakage would be minimized
 2. Making sure (some of) the root servers supported IPv6
 3. Figuring out the appropriate policies to make the change
 4. Implementing the root zone change for the root server operators that requested IPv6 support

IPv6 in the Root Timeline

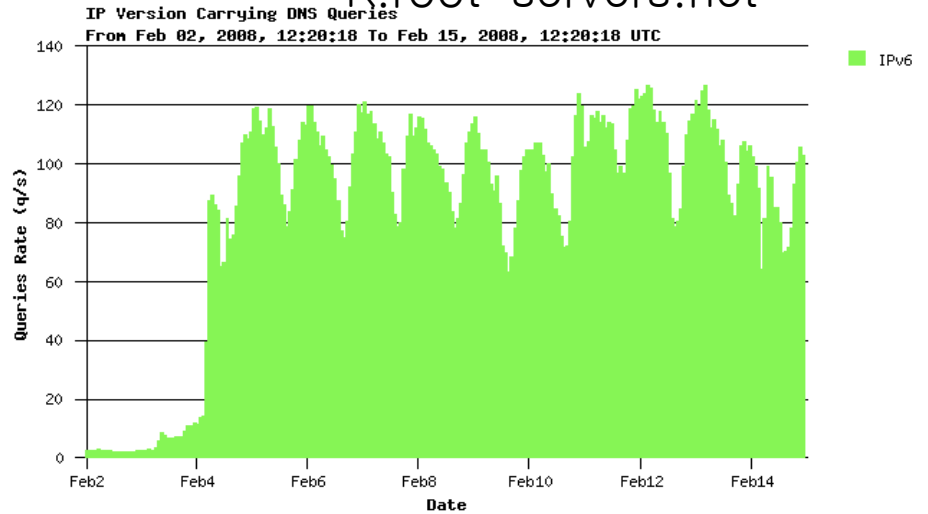


Technical Impact

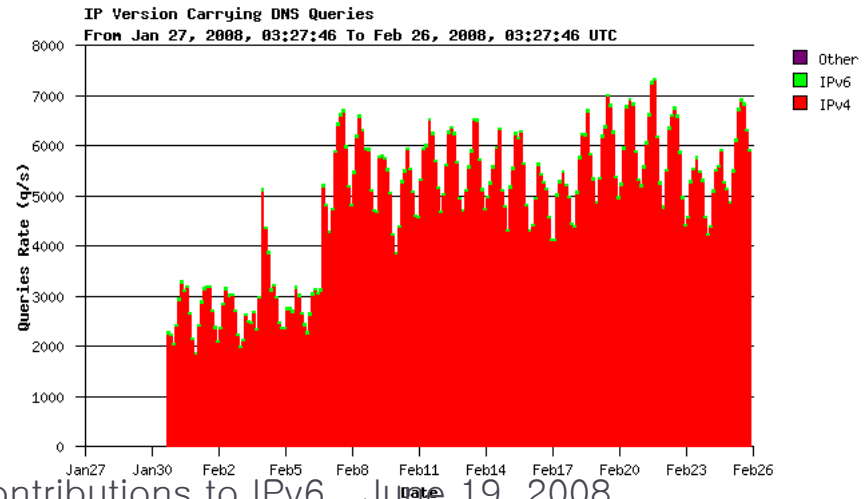
M.root-servers.net



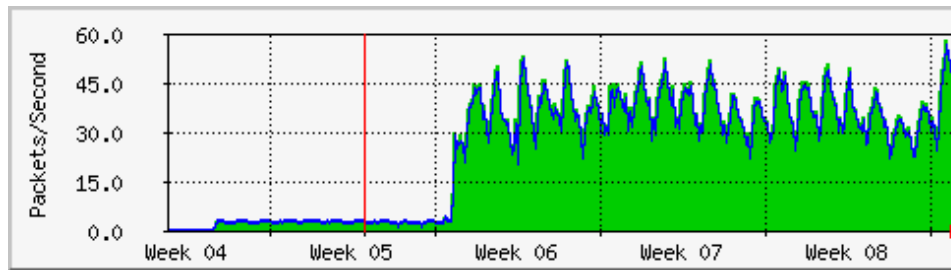
K.root-servers.net



F.root-servers.net



H.root-servers.net



Non-Technical Impact

The screenshot shows a news website with a navigation menu at the top including Home, News, Sport, Radio, TV, Weather, and Languages. The main content area features a large article titled "Switch To IPv6 On Internet's Root Servers Begins" by Antone Gonsalves, dated February 4, 2008. The article text states: "The current version -- IPv4, which can accommodate 4.3 billion addresses -- would have run out of addresses by 2012, experts predict." The article is from InformationWeek, with a sub-header "DEFINING THE BUSINESS VALUE OF TECHNOLOGY". A sidebar on the left contains a category menu with options like "Domain Names", "Domainnamen", "Noms de Domaine", "Dominios", "Governance", "Internet Use/New Tec", "Digital Divide", "Comment/ Miscellane", "Legal, Privacy & Sec", "VoIP", "Spam", "Censorship", "Child protection", "Government & Policy", "File Sharing", and "Research". A "Start your DOMAIN" banner is also visible. A "What Readers Are Talking About" section on the right lists "Outsourcing Hench Trouble" and "How To Blow Up Satellite".

Summary

- ▶ ICANN, as coordinator of global Internet resources, has a limited active role in the deployment of IPv6
 - ▶ Mostly encouraging others to act
- ▶ IANA does have a role in the deployment of IPv6
 - ▶ Adding IPv6 address to the root servers and top-level domains on request
- ▶ Deployment of IPv6 at the root servers has
 - ▶ Resulted in O(100) qps hitting the roots
 - ▶ Increased public perception of IPv6 deployment

Questions?

