IANA
Important, but not for what they do

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17 October 2016

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Once Upon a Time

- Started with Network Working Group - 1968
  - Ad-hoc group *"concerned with the HOST software, the strategies for using the network, and initial experiments with the network"* RFC 3
    - NWG ghost haunted RFCs until late 2009
- Then RFCs – 1969
  - Jon Postel RFC series editor

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Network Working Group
Request for Comments: 2026
BCP: 9
Obsoletes: 1602
Category: Best Current Practice
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- Then coordinating socket numbers – 1972
  - Jon Postel coordinator
    - IANA name – RFC 1060 in 1988
      - Joyce K. Reynolds listed as the IANA contact

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More than sockets

- IP & Protocol Parameters: RFC 739 – 1977
- IP address are too hard – DNS: RFC 882/3 – 1982
- Hierarchy is your friend – common TLDs: RFC 920 – 1984

- All the parts in place by 1984
  - Jon & Joyce @ USC-ISI
  - Funded by U.S. government
    - e.g. 1988 DARPA contract with ISI, extended in 1997

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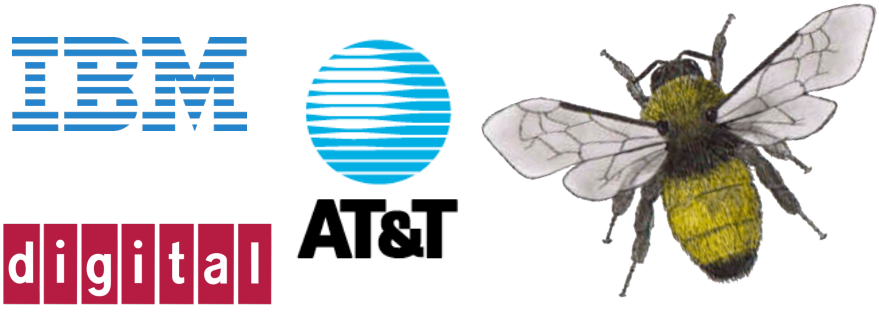
But "no one" cared for a decade

- Well, the Internet folk did
- But the traditional telcom and corporate networking people and companied did not
  - Its just a toy – no QoS, no guarantees, no security



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Steady State 1984-1995

- Protocol Parameters
  - Database maintenance (only) for IETF
- IP addresses & ASNs
  - Allocate blocks to RIRs
    - Network Solutions, RIPE-NCC, APNIC
- DNS
  - RFC 920 TLDs + .net + .int + root servers ("oversee")
  - RFC 1591: Domain Name System Structure and Delegation
    - *There are a set of what are called "top-level domain names" (TLDs). These are the generic TLDs (EDU, COM, NET, ORG, GOV, MIL, and INT), and the two letter country codes from ISO-3166. It is extremely unlikely that any other TLDs will be created.* – Jon Postel, March 1994

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$$$$$

- 1993: Network Solutions won RFP to register domain names in .com, .net & .org
- Sept. 1995: NSF OKed Network Solutions charging for domain name registrations - $100/2 years
  - About 100K .com names in 1995
    - Would be 1M by 1999

- Money to be minted
- But Network Solutions was the only game in town
  - Some ccTLDs saw the lure

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DNS and the other two

- IANA dealt with three topics
- But DNS was the only one of interest to most people
  - It was where the money was
  - It was where the Trademark issues were
  - It was where the lawyers were
  - It was where the politicians were
  - It was where the policy wonk wanabees were
  - Its all the news media could grok (or think they did)

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More TLDs?

- Firestorm over charging for domain names
- Fall 1995: Postel floated idea of adding new TLDs
  - To create competition
- Nov. 1995: ISOC DNS restructure proposal
  - draft-isoc-dns-role-00.txt
    - IAB & ISOC chairs, Jon Postel & Nick Trio co-authors
  - Move gTLD management under ISOC
  - Register new gTLDs (note – called iTLD "international")
- Nov. 1995: NSF-sponsored DNS workshop at Harvard
  - NSF sensing firestorm?

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DNSEVOLV BOF

- Dec. 1995: DNSEVOLV BOF at IETF 34 in Dallas
- Agenda:
  - ISOC proposal
    - Spirited discussion
  - Do we need more TLDs?
    - Rough consensus
      - New gTLDs would solve few problems
      - New TLDs not competition for existing TLDs for existing domains
        - Too hard to rewire the web to point to a new domain
      - But …

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IAHC

- May 1996: Postel – proposed ad hoc DNS working groups for DNS issues
  - draft-postel-iana-itld-admin
    - Also proposed 150 new gTLDs in first year, 30/year afterward
- Nov. 1996: International Ad-Hoc Committee (IAHC) formed by ISOC & IANA
  - Representatives from IAB, NSF, WIPO, ITU, INTA
  - Report & MoU published in Feb. 1997
    - Recommended establishing 7 new TLDs
    - Recommended Registrar/Registry model
    - > 200 signers of the MoU

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Incoming!

- Feb. 1997: Image Online Design sued IANA
  - i.e. Jon Postel
  - Claimed he had reneged on a promise to sell .web to Image Online Design
    - Claimed they had an oral agreement
  - Sued to stop IAHC plan (which included .web)
- Jul. 1997: Eugene Kashpureff rerouted InterNIC website to AlterNIC using DNS cache poisoning
  - AlterNIC was an alternative DNS tree

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Meanwhile

- ARIN incorporated April 18, 1997
- In business Dec. 1997
- FCC required language in Articles of Incorporation
  - *to encourage the exploration of new addressing and routing technologies that reduce or eliminate the costs or in some cases the need for renumbering when an Internet Service Provider or end user changes to a new Internet Service Provider; and, when such alternatives are developed, to work with its members to facilitate the assignment of portable addresses and/or the elimination of the cost of Internet Protocol renumbering*

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(Vice?)Presidential Directive

- 1 July 1997: *A Framework for Global Electronic Commerce*
- Principles
  - *1. The private sector should lead.*
  - *2. Governments should avoid undue restrictions on electronic commerce.*
  - *3. Where governmental involvement is needed, its aim should be to support and enforce a predictable, minimalist, consistent and simple legal environment for commerce.*
  - *4. Governments should recognize the unique qualities of the Internet.*
  - *5. Electronic Commerce over the Internet should be facilitated on a global basis.*

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(Vice?)Presidential Directive, contd.

- 2 July 1997: *Request for Comments on the Registration and Administration of Internet Domain Names* (62 FR 35896)
- Requested comment on principles including:
  - *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.*
- 430 comments received

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Meanwhile

- Jon worked on a proposal of his vision of a "institutionalized" IANA
- Consulted with many in IETF
- Consulted with Ira Magaziner (DoC)
- Semi-final by end of 1997

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Reengineering the Internet

- Conference in London, Jan. 26-29 1998
- Ira Magaziner foreshadowed U.S. government approach

  Question in Q&A – Why not just give IANA to ITU?

  Magaziner: Internet moves too fast for governments
- Jon could not make it, in his stead I presented: *Institutionalizing the IANA Functions To Deliver a Stable and Accessible Global Internet for Mission Critical Business Traffic and Transactions*

  Copy on www.sobco.com (Google for it if interested)

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Excitement!

- Jan. 28 1998 (during the conference) – U.S. government discovered Jon had "redirected the root"

  A process experiment?
- Caused quite a buzz at the conference
- Heated, in private, words from Magaziner to me "Get this message to Jon, NOW."

  Ira was one unhappy dude!
- "Experiment" ended a few days later

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Green Paper

- 20 Feb. 1998: *Improvement of Technical Management of Internet Names and Addresses; Proposed Rule*
- Informed by IAHC-MoU, but not a clone

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 entity for the benefit of the Internet as a whole.

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Green Paper, contd.

- 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.

- i.e., all of IANA, not just DNS, but just IANA
- > 400 comments received

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We want out!

- 16-20 Feb. 1998: APRICOT '98 Manila
- Heads of 3 RIRs & I met with Jon
- RIR request: leave us out of new IANA

  We do not want to be "in bed" with the DNS mess

  Too many lawyers and too much antagonism
- Me: same relative to protocol parameters
- Jon: not enough "there there" with numbers or parameters for them to stand on their own, need DNS to make a viable organization

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We want out!, Another Attempt

- As ISOC VP for Standards I, at some point, asked DoC to take the protocol parameters out of the IANA contract
  - Not everyone in IETF wanted out, but worth asking
- DoC said "no" because they wanted to "move" the existing IANA contract w/o change
  - Any change might mean they would have to rebid the whole thing
    - With the result being totally unpredictable
- Note: no problem with service IETF was getting!

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White Paper

- 10 June '98: *Management of Internet Names and Addresses* (63 FR 31741)
- "Statement of Policy"

  Internet stakeholders are invited to work together to form a new, private, not-for-profit corporation to manage DNS functions

  1) set policy for and direct allocation of IP number blocks to regional Internet number registries;

  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.

  the new corporation could be funded by domain name registries, regional IP registries, or other entities identified by the Board.

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Self Appointed Community Reviews

- *International Forum on the White Paper*
  Meetings in Reston, Geneva, Singapore, & Buenos Aires
- *Boston Working Group*
- …
- Thousands of attendees
- Talking about a very different concept than just the 4 IANA functions
- Assumed "the Internet manager"
- i.e., wanting to fill a needed vacuum

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ICANN Proposal

- Jon developed a specific proposal for the *Internet Corporation for Assigned Names and Numbers*
- 2 Oct. 1998: proposal submitted
- 16 Oct. 1998: Jon died
- 20 Oct. 1998: DoC said they would accept Jon's proposal (with tweaks)
- 26 Oct 1998: 1st ICANN board meeting
  Closed door meeting
  Set a pattern?
- 21 Nov 1998: ICANN incorporated
- 25 Nov. 1998: DoC & ICANN sign 10-year MoU

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ICANN MoU

- *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.

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ICANN MoU, contd.

- *The DOC agrees to perform the following activities and provide the following resources in support of the DNS Project:*

  Provide expertise, participate & collaborate …

  Consult with the international community on aspects of the DNS Project.

  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

  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.

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Affirmation of Commitments

- Sep. 2009 MoU replaced by *Affirmation of Commitments*

  This document affirms key commitments by DOC and ICANN, including 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

- Plus other operational commitments

  Pay attention to the GAC

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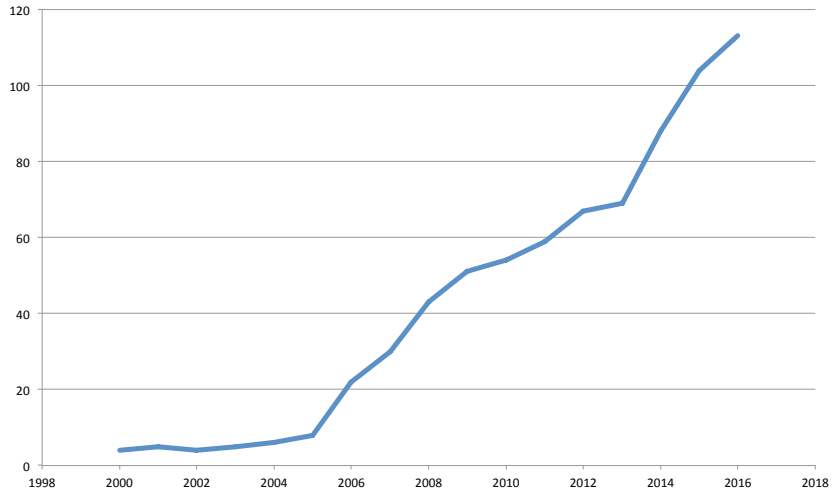
ICANN Budget: $M



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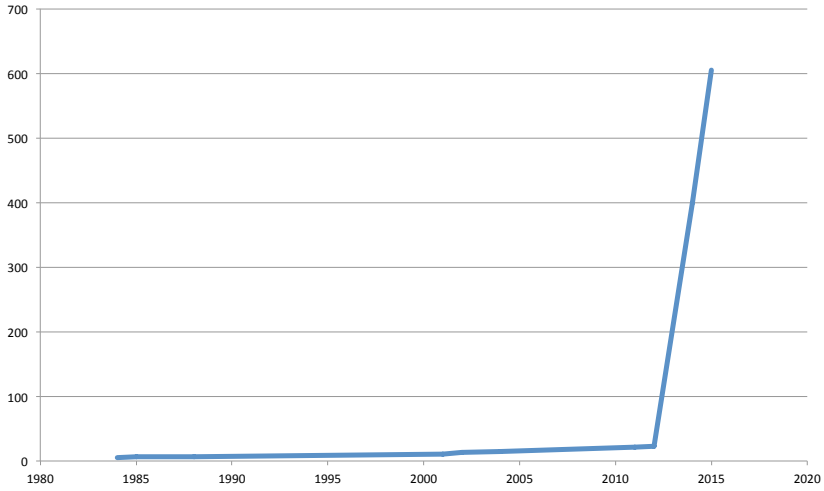
ICANN: gTLDs are us



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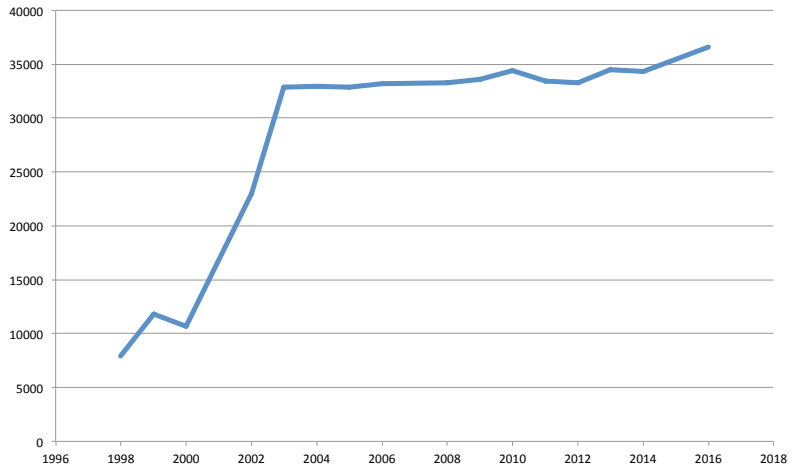
ICANN Bylaws: Words



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I am Ignoring

- WSIS
- Various ITU and ITU-T proposals
- IGF
- …
- Mostly ignoring ICANN community support
  - Blew a lot of good will at start
  - Too often seen as secretive & capricious
  - General I* view is that its better than any foreseeable alternative

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Environmental Changes

- Sep. 2001: India, Brazil, and South Africa (IBSA) Internet governance (whatever that is) to UN
- Jun. 2013: Edward Snowden
- Oct. 2013: I* - *Montevideo Statement on the Future of Internet Cooperation*
  - Lets get a move on away from US government oversight
- Apr. 2014: NetMundial Initiative
  - 25-member council to be Internet governance

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The Beginning of the End of the Beginning

- 14 Mar. 2014: *NTIA Announces Intent to Transition Key Internet Domain Name Functions*
- Requests **one** IANA transition plan
- *The transition proposal must have broad community support and address the following four principles:*

  Support and enhance the multistakeholder model;

  Maintain the security, stability, and resiliency of the Internet DNS;

  Meet the needs and expectation of the global customers and partners of the IANA services; and,

  Maintain the openness of the Internet.

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Transition Proposal Requirements

- Parties to be Involved

  Internet Engineering Task Force (IETF)

  The Internet Architecture Board (IAB)

  The Internet Society (ISOC)

  The Regional Internet Registries (RIRs)

  Top level domain name operators

  VeriSign

  And other interested global stakeholders.

- *NTIA will not accept a proposal that replaces the NTIA role with a government-led or an inter-governmental organization solution.*

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Developing a Transition Proposal

- Jun. 2014 *IANA Stewardship Coordination Group* (ICG) formed to develop the proposal to be sent to the NTIA
- 3 sub groups:
  - IP addresses
    - *Coordinated RIR IANA Stewardship Proposal* (CRISP)
  - Protocol Parameters
    - IETF *ianaplan* Working Group
  - Domain Names
    - *Cross Community Working Group* (CWG)

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ICANN Accountability

- Major concern – who/what will hold ICANN accountable after the transition?
- Fall 2014: *ICANN Accountability and Governance Cross Community Working Group* (CCWG) created to work on an accountability and governance plan

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Accountability Result

- After huge community & ICANN effort
- Revised ICANN mission statement
- Independent Review Process
- Empowered ICANN community that can take action only *after extensive community discussions and debates through processes of engagement and escalation*

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Community Powers

Reject ICANN Budgets, IANA Budgets or Strategic/Operating Plans.

Reject changes to ICANN's Standard Bylaws.

Approve changes to new Fundamental Bylaws, Articles of Incorporation and CANN's sale or other disposition of all or substantially all of ICANN's assets.

Remove an individual ICANN Board Director.

Recall the entire ICANN Board.

Initiate a binding Independent Review Process (where a panel decision is enforceable in any court recognizing international arbitration results).

Reject ICANN Board decisions relating to reviews of the IANA functions, including the triggering of Post Transition IANA separation.

The rights of inspection and investigation

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Towards a Transition Proposal

- 6 Jan. 2015: IETF submits plan to ICG
- 15 Jan. 2015: CRIPS submits plan to ICG
- 25 Jun. 2015: CWG submits plan to ICG
- 29 Oct. 2015: ICG creates final plan
  On hold pending accountability plan
- Jan 2016: 3 groups suggest moving IANA IPR to IETF Trust, IETF Trust agrees to hold IPR
- Feb 2016: CCWG produces final accountability plan
- 10 Mar. 2016: Transition Proposal submitted to NTIA

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Meanwhile

- 10 Apr. 2014: US. House subcommittee hold hearing on transition – no outcome
- 17 Sep. 2015: NTI extends IANA contract to 30 Sep. 2016
- 14 Dec. 2015: US Congress blocks NTIA from relinquishing responsibility for Internet DNS functions at least until September 30, 2016
- Spring 2016-Sep. 2016: some in congress try to block transition
  Because it would be taken over by Russia or China and endanger our rights on our Internet

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Done Deal

- 27 May 2016: ICANN changed its Bylaws to implement accountability plan
- 30 Sep 2016: congress block to action and IANA contract expire
- 1 Oct 2016: the beginning of an independent IANA

- What Jon planned for and what DoC had said they wanted since 1998

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The Realization (sort of)

After several years of debate and several months of very hard work ... we are dose to accomplishing the challenge laid down in the White Paper: to create a global, consensus nonprofit corporation with an international board, transparent and fair procedures, and representation of all the various Internet constituencies, from the technical people who created and have nurtured the Internet from its earliest days, to the commercial interests who now see it as an important business tool, to individual users from around the globe.

Jon Postel, 7 Oct. 1998

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