
Internet Governance: Where Are We Now?

Feb 24, 1999
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Internet Realities

- ◆ once a toy, now infrastructure
- ◆ thousands of Internet service providers (ISPs)
- ◆ hundreds of exchange points between ISPs
- ◆ little government money
 - some support for basic research, but not operations (US anyway)
- ◆ no one “runs” it

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Is anyone in control?

- ◆ no (well mostly no)
 - no dominant provider
 - trans-border so no single government
 - no useful industry group
- ◆ standards group “closest thing to governance”
 - (The Gordian Knot)
 - Internet Engineering Task Force (IETF)
 - but that is not governance!

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Internet Engineering Task Force - IETF

- ◆ develops Internet “standards”
 - not “standards” in the ISO / ITU / ANSI sense
 - standards in the ‘lots of people use it’ sense
- ◆ does little policy
 - technology does dictate some policy - e.g RFC 2050
 - required good security in IPv6
- ◆ international, non-member organization
- ◆ IETF is the standards creation part of the Internet Society (ISOC)

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IETF, contd.

- ◆ now working in the same area as “traditional” standards organizations
 - result of “convergence”
 - everything over IP (the Internet Protocol)
 - competing standards in some cases
 - cooperation in others
- ◆ technical part of the Internet now runs under IETF rules
 - not all that unhappy to be rid of the responsibility

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What does governance mean in the Internet context?

- ◆ governance means answering two questions
 - Who says who makes the rules?
 - Who says who pays for what?
- ◆ easy in most current technology areas
 - railroad regulations, TV content, nutrition labeling
 - some fuzz when signal leaks across a border
- ◆ but hard for the Internet
 - unbounded connectivity and access
- ◆ but that is (theoretically) not what we are talking about in the current plans

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Complication

- ◆ remember the Internet is international
 - hard enough for state legislators to deal with crossing state borders
 - NY court ruled such regulation is unconstitutional
- ◆ what is the constitution of cyberspace?
 - or the court system?

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How did we get here?

- ◆ at the start there were researchers
 - mostly funded by US military
 - does the military still “own” it? (some say yes)
- ◆ researchers needed a documentation system
 - RFCs
- ◆ and a numbers registrar
 - IANA

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Assigning Internet Values

- ◆ Internet value assignment & recording mechanism predates the Internet
- ◆ started at the beginning of the ARPANET
- ◆ continuity of responsibility for more than 25 years
- ◆ documented in RFCs (IETF publication series)

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Other Things to Assign

- ◆ IP Addresses
- ◆ Top Level Domain Names

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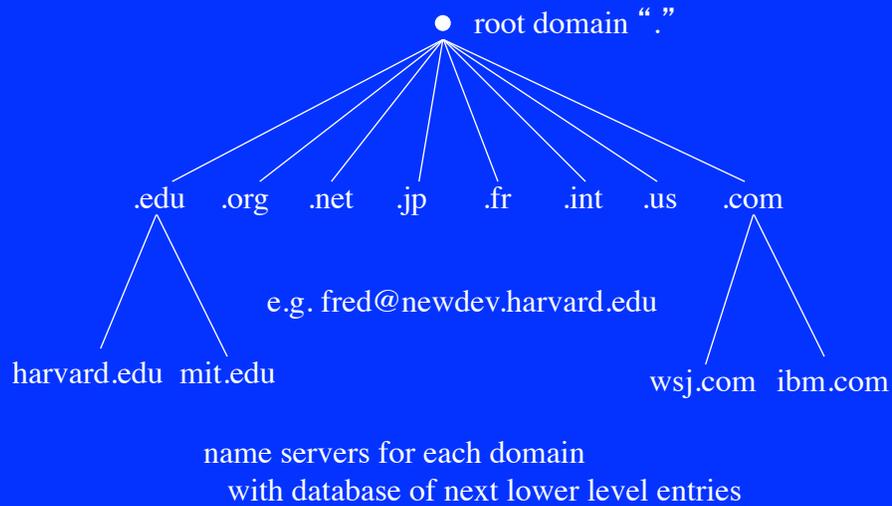
IP Addresses

- ◆ Internet Protocol defined in 1981
 - RFC 791 (1 Sep 1981) *Internet Protocol*
 - uses 32-bit IP Address as interface ID and locator
 - 44 Class A IP Addresses assigned in RFC 790

Top Level Domains

- ◆ domain names - user-friendly host reference
 - initially conversion to IP Address used table lookup
 - now distributed databases on DNS servers
 - multi part and hierarchical - right most part is TLD
 - RFC 819 (8 Feb 1982) *Computer mail meeting notes*
 - assigned 1st top level domain (TLD) - .ARPA
 - RFC 920 (1 Oct 1984) *Domain requirements*
 - added .GOV, .EDU, .COM, .MIL, .ORG
 - and 2 letter country code TLDs
- ◆ policy included - who can register in which TLD

Domain Names



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Assignment Authority History

- ◆ initially an ad-hoc function
adjunct to RFC Editor
- ◆ performed initially by Jon Postel then by the IANA
1969 - 1973 - UCLA
1973 - 1974 - Mitre Corporation & Keydata
1974 - 1977 - SRI International
1977 - 1998 - USC / ISI
- ◆ under ARPA (DARPA) funding
- ◆ Internet Assigned Numbers Authority (IANA)
name established in 1989

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Current IANA Responsibilities

- ◆ protocol parameters
- ◆ IP addresses
- ◆ domain names
- ◆ root domain

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Protocol Parameters

- ◆ port numbers and other parameters to extend Internet standards
- ◆ assignments based on rules established by IETF when specific technology is defined
- ◆ IANA records new assignments
- ◆ currently only for IETF standards
- ◆ some worry over control of this function

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IP Addresses

- ◆ actual assignments performed by regional registries
 - non-profit geographically based organizations
 - ARIN, RIPE, APNIC
 - additional registries expected
- ◆ IANA
 - cooperates in establishing allocation guidelines
 - e.g. RFC 2050 (Nov 1996) *INTERNET REGISTRY IP ALLOCATION GUIDELINES*
 - reviews complaints about registries
 - allocates blocks of addresses to registries

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IP Address Issues

- ◆ exclusive geographic territories
- ◆ non-profit, no competition
- ◆ IP addresses & routing table space are scarce resources
- ◆ CIDR assignment restrictions
 - IP addresses non-portable
 - makes it hard to change ISPs
- ◆ I.e. IP addresses are loaned not owned

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Domain Names

- ◆ IANA only deals with top level domains
e.g. .edu, .jp
- ◆ two types
 - country code Top Level Domains - ccTLDs
 - generic Top Level Domains - gTLDs

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ccTLDs

- ◆ based on ISO 2 letter country codes
e.g., .fr, .jp, .us, .gn
note: IANA does not create countries
- ◆ IANA records a registrar for each ccTLD
can get contentious - lots of money at issue
- ◆ may have to help resolve disputes between competing organizations
generally “settle it yourselves”
but governments can carry big sticks

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gTLDs

- ◆ current gTLDs:
 - .com, .net, .org, - general use
 - .edu - 4 year colleges and universities
 - .int - international treaty orgs and Internet databases
 - .gov, .mil - US government & US military
 - .arpa - reverse lookup of IP Addresses
- ◆ most managed by Network Solutions Inc.
 - under cooperative agreement with US National Science Foundation
- ◆ many suggestions for more gTLDs

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The Start of Something Big

- ◆ pressure for more gTLDs after NSI started charging (\$50/yr) - i.e. change the rules
 - a few \$100 M to date - 1M names in 6 mo
- ◆ ISOC took suggestion from IANA & IAB chair and formed IAHC
- ◆ produced proposal
 - 7 new gTLDs
 - non-profit, cost recovery, registry as “back room”
 - N (83 signed up) registrars - all with access to new gTLDs
 - policy group (POC) for making rules

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Green Paper

- ◆ US government decided to help
- ◆ produced proposal for a new organization to deal with the management of specific technical functions
 - incorporate IANA
 - board of directors
 - IP address registries, name registries & registrars, protocol, industry & user

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White Paper

- ◆ revision of Green Paper after comment period
- ◆ fuzzy in details
- ◆ wants new organization to define structure
- ◆ wants new organization to define policy development process(s)

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Internet-based governance

- ◆ White Paper proposed Internet-based governance
 - but only of some technical functions
 - protocol parameters, IP addresses, domain names
- ◆ ground up governance
 - by ISPs
 - domain name owners
 - Internet equipment vendors
 - Internet users
- ◆ but we have no “running code”

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Problems - Internet-based

- ◆ how to enforce “rules”
 - e.g., privacy protection
 - trust business? (US proposal)
- ◆ how to resolve differences
- ◆ ISP power a threat
 - business power a threat
- ◆ who protects the user?
- ◆ “that goose is too fat”
 - Internet is just too important

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Responding to White Paper

- ◆ Jon Postel (and many Internet-based people) developed a proposal the IETF way (sort of)
 - iterative drafts in response to comments
 - too much passion for open working group
- ◆ International Forum on the White Paper- IFWP
 - started as a meeting called by self appointed group
 - at start mostly people who wanted to get rich from names
 - developed wider support - seen as reasonable forum
 - developed into series of international meetings
 - trying to find consensus points in issues

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1st End Game

- ◆ two “main” players - IANA & NSI
 - negotiated (hard) to produce ICANN proposal
 - back room deal
 - timing meant no “final” IFWP / ICANN meeting
- ◆ ICANN submitted to US government
 - complication - Jon Postel died
 - also other proposals - as modified ICANN bylaws
- ◆ after comment period government response
 - suggested bylaws modifications
 - after bylaws changes US Government gave ICANN the go ahead to proceed

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ICANN

- ◆ Internet Corporation for Assigned Numbers and Names
- ◆ proposes structure as defined in White Paper
 - board - 9 at-large members, plus 2 members each from SOs
 - initial at-large members named
 - 4 US, 3 Europe, 2 AP
 - SOs - supporting organizations - policy development & \$ protocols, addresses & names

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Meanwhile

- ◆ NSI & US Government negotiated an extension to the NSI cooperative agreement
- ◆ 2 year extension
- ◆ sharing .com, .net & .org by next summer
- ◆ separate registry & registrar functions
- ◆ regulated return for registry function
- ◆ ICANN given responsibilities w/o ICANN involvement

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2nd End Game

- ◆ strong international support for ICANN
 - but some individuals still have problems
- ◆ as we speak
 - ICANN trying to figure out:
 - process for creating a member-based organization
 - process for accepting SO proposals
 - operation of root servers
 - authority

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Why so Much Heat?

- ◆ greed - want to out do NSI in selling names
 - e.g. .tv
- ◆ potential power
 - the new organization will be the “natural” home for all Internet policy issues
 - settlements, content control, commerce rules ...
- ◆ looks like non-government government
 - deals with issues that cross borders which governments normally do

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Non-Governmental Government

- ◆ ICANN bylaws exclude government people
- ◆ “logical” body already exists - ITU
 - government treaty organization
 - government people control process
- ◆ or even the UN - same “features”
- ◆ aim to have direct representation of people rather than indirect through governments
 - some governments seem a bit worried

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A Basic Question

- ◆ who gave the US Government the right?
 - remember the Internet is international
 - but congress is not all that sure about the last fact

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What did we Learn?

- ◆ no clear answer to basic questions

Who says who makes the rules?

ISOC said they did, then IANA/IETF then IFWP

in the end (so far) it was US government

but 1st rule is to hand rulemaking (in a defined area)
over to a private organization

Who says who pays for what?

upcoming fight

“tax the ‘Net” was a banner for the anti-ICANNers

What Now?

- ◆ may you live in interesting times