Internet Governance & Current Internet Eco-system

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Overview

• Who am, I why am I here?
• Brief History of Internet
• Internet Eco System: Organizations, Forums, Groups, Standard Bodies
• How it all comes together?
• Current Issues, hot topics
• What is it to you?
• Open mic: What do YOU think?
Who am I, why am I here?

• Sr Manager Network Strategy @Akamai
• Vice Chair Address Support Organization Address Council @ICANN
• Former RIPE Program Committee Chair
• Former ICANN Sr Director of Participation and Engagement
• Former RIPE NCC Policy Development Officer
• Very former software developer
• ISOC TR Founding member
• Overall active Internet citizen
Brief History of Internet

• Early 60s, academia “packet switching”
• Late 60s, ARPANET is developed, supported by US gov
Protocol Wars: 70s-80s

• TCP/IP (Transmission Control Protocol/Internet Protocol) versus OSI (Open Systems Interconnect)
• TCP/IP differs from the OSI model in that it combines the session, presentation, and application layers into a single application layer.
80s

Eventually TCP/IP found to be more pragmatic
ARPANET switches to TCP/IP
Beginning of the Internet as we know today
Both technically and governance-wise
80s

- SMTP (Simple Mail Transfer Protocol)
- DNS (Domain Name System)
- First .com domain registered (symbolics.com)
- IETF (Internet Engineering Task Force)
- BGP (Border Gateway Protocol)
- FIXes (Federal Internet Exchange)
Early 90s

- Internet is more and more liked
- Demand for commercialization, privatization and broader access
- First commercial ISPs providing access to public
- (CIX) Commercial Internet Exchange Point
- Gopher, World Wide Web, Search engines
- Internet is more and more seen as a *self-governed* technology
- ISOC (Internet Society), NANOG (North American Network Operators Groups), RIRs (Regional Internet Registries)
Self-Governance?

We reject kings, presidents and voting. We believe in rough consensus and running code.

David Clark at a 1992 talk describing the Internet Engineering Task Force
Late 90s

• Demand for broader access
• Wireless networks
• Need for more identifiers: IPv6
• Need for better security: DNSSEC
• CDNs start becoming attractive
• Better coordination demand: ICANN is established
2000s

- Dot-com bubble: real economical impact
- Internet Governance Forum (IGF) established
- Routing security: Resource Public Key Infrastructure
- Internationalized country code TLDs (IDN ccTLDs)
- New gTLDs

- Skype, youtube, iTunes Store, Facebook, Twitter...
Where are we today?

Where are we today?

• Internet penetration:
  – 2000: 6.5% of the global population
  – 2015: 43% of the global population

• Households with Internet access:
  – 2005: 18%
  – 2015: 46%

• 7 billion people (95% of the global population) live in an area that is covered by a mobile-cellular network

Where are we today? IPv4 Numbers

http://www.potaroo.net/tools/ipv4/
So where are we really today?

- Internet seen as a utility
- Our lives seem to depend on it more and more
- Money, commerce, navigation, civil rights execution & processes, entertainment, educations... digitilized
- Increased online footprint of individuals
- World economy relies on Internet
Hence

• Security, Stability, Sustainability of Internet is a top priority

• Raising context about “Control of it”
Who is in Charge?

• Governed through a distributed system
• Not governed by one single group or entity
• Several actors play crucial roles and work together to keep it going
• Bottom-up decision making processes in place

This is called *multi-stakeholder* model
Internet Eco System

Internet Governance Forum

IETF

Internet Architecture Board

Law Enforcement Agencies

W3C

Regional Internet Registries

NOGs and NOFs

ICANN

ITU

OECD

WIPO

WTO

NRO
Multi-stakeholder Model

- Unique form of governance
- Global reach and outlook
- Bottom-up decision making
- Decentralized control
- Inclusive & participative processes
- Attention to voices of the community as much as voices of power
- Voluntary involvement
Organizations: ICANN

- ICANN: Internet Corporation for Assigned Names and Numbers
- Holds IANA function, registering Internet protocol (IP) addresses and autonomous system (AS) numbers
- Domain names (system referred to as DNS) The operation of the DNS root name server system
- Coordinates the policy development related to these technical functions through its Community
Real life Example: New gTLDs

- 2004: New gTLD issue raised in GNSO, a PDP (Policy Development Process) was initiated
- 2005-2007: Discussions followed by development of policy recommendations
- 2008-2012: Adoption of the policy by the ICANN Board, starting implementations More discussions followed by opening of application system
- 2013: ~2000 applications
- Now: New names are out and operational
  http://www.nic.uno
  http://www.annualreport.axa
Regional Internet Registries (RIRs)

- AfriNIC, APNIC, ARIN, LACNIC, RIPE NCC
- Not-for-profit membership organisations that support the infrastructure of the Internet through technical coordination in their service regions
- Responsible of registration of IPv4, IPv6 and AS Number resources to their members
- Coordinate the policy development related to these resources through their Community
Real Life Example

- RIR communities discussed how the last bits of IPv4 space should be distributed among RIRs (last /8s)
- They decided on a policy and asked IANA (ICANN) to implement
- Then they went on coming up with “regional” policies how their own /8 should be used within the region
IETF

• Internet Engineering Task Force
• More of a forum than a legal entity
• Parented and supported by ISOC (Internet Society)
• Producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet.
IETF, ICANN, RIR, Operational Community interaction

IETF sets standards and best common practices. Once a standard is recognized, IANA and/or RIRs implement Operational community also puts it in practice.

Examples:

• RFC 4632: Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan
• RFC 4291: IP Version6 Addressing Architecture
• RFC 5398: Autonomous System (AS) Number Reservation for Documentation Use
ISOC

• Supports IETF
• Runs PIR Registry (.org)
• Advocates for equal access to the Internet
• Promotes the open development, evolution, and use of the Internet
• Heavily involved with capacity building and policy issues
Others

- Network Operator Groups and Forums (NOGs and NOFs)
- RIPE, NANOG, APRICOT, SANOG, UKNOF, etc etc
- Volunteer regional collaboration groups
- Internet Exchange Points (IXPs)
- Peering Forums
Current Issues, hot topics

- IANA Transition

- IANA: Internet Assigned Numbers Authority
  http://www.iana.org/

- IANA is responsible for the global coordination of the DNS Root, IP addressing, and other Internet protocol resources.

- IANA manages the DNS Root Zone (assignments of ccTLDs and gTLDs) along with other functions such as the .int and .arpa zones.

- IANA coordinates allocations from the global IP and AS number spaces, such as those made to Regional Internet Registries.

- Current ASN and IP block Delegation process:
  IANA $\rightarrow$ RIR (ex: RIPE NCC) $\rightarrow$ LIR (ex: UPC)
IANA Function Oversight Transition

National Telecommunications and Information Administration (NTIA), an agency in the U.S. Department of Commerce, delegates this function to a contractor, which always had been ICANN historically, since 1997.

In March 2014, the NTIA announced its intention to transition stewardship of the IANA functions to the Internet community.

The IANA Stewardship Transition Coordination Group (ICG) is a multistakeholder group convened to coordinate the production of a global proposal for the transition of IANA oversight.
Process

AFRINIC
APNIC
ARIN
LACNIC
RIPE

CWG [_NAMES]
CCWG

CRISP
ICG

IETF

Dec 2014
Jan 2015

ICANN Board
NTIA

ICANN 53, ASO/AC session, CRISP & IANA Transition, June 25 2015
Before/After

**IANA Accountability**

**BEFORE** (Currently)
- NTIA → ICANN → IANA Numbering Operations
  - Contractual accountability
  - Organisational accountability

**AFTER**
- Five RIRs (Community advice) → ICANN → IANA Numbering Operations
  - Contractual accountability
  - Organisational accountability

*ICANN 53, ASO/AC session, CRISP & IANA Transition, June 25, 2015*
June 09, 2016

“The U.S. Commerce Department's National Telecommunications and Information Administration (NTIA) finds that the IANA Stewardship Transition Proposal developed by the global Internet multistakeholder community meets the criteria NTIA set in March 2014.”

Finally fame!

Ted Cruz Fights Internet Directory’s Transfer; Techies Say He Just Doesn’t Get It

By CECILIA KANG and JENNIFER STEINHAUER    SEPT. 15, 2016

The internet belongs to the world, not to Ted Cruz

Posted Sep 21, 2016 by Brian Schatz (@SenBrianSchatz), Anna Eshoo (@RepAnnaEshoo), Chris Coons (@ChrisCoons), Doris Matsui (@DorisMatsui), Frank Pallone (@FrankPallone), Mike Doyle (@USRepMikeDoyle)
Net Neutrality

• Nov 2015: EU Commission adopted rules on net neutrality (open internet)
• April 2016: EU rules came in force
• June 2017: No more roaming charges within EU
Other issues

• New gTLDs: name collisions
• Security vs privacy
• Market shifts/changes:
  – IX, OTT, Transit providers
  – Growth in demand not same with supply
What is it to you?

• Operation has impact on policy and legislation
• Policy and legislation has impact on operations
• Law enforcement and governments are part of the platform
• Technical community is needed to express technical and operational needs
• Keeping dialogue is the only way for innovation and self-regulation of Internet
How to get involved

• Find your interest group
  security, privacy, abuse, routing, dns, open source?
• Most organizations/fora have newcomers programs
• Get introductions, connect
• Read/observe what is going on:
  most engagement/participation is happening online!
• Attend to meetings; funding can be found!
• Regional NOGs often are free, ISOC and some RIRs have
  fellowship programs or student discounts
• If not, most groups provide remote participation tools too!
  Be bold, attend actively, join discussions and present
Open Mic

• Questions/Comments?
• What do you think about the current issues
  – IANA Transition
  – Net Neutrality
  – Market Shifts
    • More demand on video
    • Are we ready?