The Internet:
Communities, Collaboration, and Concepts

November 2011

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The Internet Society

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What is Internet Collaboration?

- Collaboration is the act of working together to produce something of mutual benefit.
- Groups can be local, regional, or global
- Efforts benefit the Internet
- Products can be new protocols, best common practices, applications, etc.

Why Collaborate?

- Common Foundation
- Building Infrastructure
- Open Standards leads to extensible applications
- Best Practices leads to predictable behaviors

Organisations and Communities of the Internet

There is no definitive list of organisations and there's a lot of participants

Some of the significant entities include:

Internet Engineering Task Force (IETF)
World Wide Web Consortium (W3C)
Internet Society (ISOC)
Internet Architecture Board (IAB)
Internet Assigned Numbers Authority (IANA)
Regional Internet Registries (LACNIC, ARIN, RIPE, APNIC, AFRINIC) - NRO
Internet Corporation for Assigned Names and Numbers (ICANN)
Regional Network Operators Groups (*nogs)
ITU
IEEE
and many more!

The Internet Engineering Task Force (IETF)

- Global
- Founded in 1986
- Participation is based on Individuals
- Participation is free (other than your time investment)
- Produces Internet Standards and related technical documents:
  - Request for Comments (RFCs)
  - Best Common Practices (BCPs)
  - Internet Drafts (IDs)
- Published through the RFC Editor: http://www.rfc-editor.org

The Internet Engineering Task Force (IETF)

- Open and participatory process
- Meetings take place three times a year around the globe
- Remote participation is encouraged! Some IETF contributors have never been to a physical meeting
- Lots of work takes place through mailing lists and other forms of communication

IETF Scope

- Protocols: “above the wire and below the application”
- IP, TCP, SMTP, DNS, SIP, ENUM, HTTP, SSL, BGP, FTP, DNSSEC, RPKI, etc.
- How to deliver the data across a network and how to deliver the data to the application

It's only good if people use it

- There is no formal recognition of IETF standards
- The process works because people choose to adopt these standards
- The goal is to set global standards in protocol development..
  - For example, my email server knows how to talk to your email server.. not knowing (or caring) about what server application you chose to install

World Wide Web Consortium (W3C)

- Is the next layer up from HTTP protocol
- Develops open standards for the web
- Publishes the W3C Recommendations document series
- Global
- Membership is based on organisations
- Paid membership

World Wide Web Consortium (W3C) Goals:

- "Web for Everyone" – to make the web available for all people regardless of the hardware, software, network infrastructure, native language, location, or physical or mental ability
- "Web on Everything" – to make the web available on the wide array of Internet "aware" devices

World Wide Web Consortium (W3C) Goals:

- "Knowledge Base" – Develop a web that holds information for use by both humans and machine
- "Trust and Confidence" – Promote technologies that enable a more collaborative environment where accountability, security, confidence and confidentiality are all possible

The Internet Society (ISOC)
The Internet is for Everyone

- Founded in 1992 as a not-for-profit charitable organisation
- Our sole focus is promoting the Internet
- Focusing on three major areas:
  - Enabling Access
  - InterNetworks
  - Trust & Identity

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The Internet Society (ISOC) Enabling Access

- Focuses on enabling access to the Internet by addressing the fundamental impediments to Internet growth and usability
- Technical Capacity Building
  - Training
  - Community Building
  - Foster Technical Leadership

The Internet Society (ISOC) Enabling Access

- Policy, Regulation and Access Environment
  - Education of key issues to promote sound policy making
  - Education on economic and social factors and how it impacts the Internet
- Enabling Access for Under-served Communities
  - The Internet as a non-Latin language medium
  - Advance development of technologies for facilitating the use of the Internet for individuals with disabilities

The Internet Society (ISOC) InterNetworks

- Focuses on the continued operation of the global Internet
- Global Addressing Program
  - Identifies challenges to global addressing (IPv4 address exhaustion, IPv6 deployment, etc)

The Internet Society (ISOC) InterNetworks

- Common Internet Program
  - Strives to dissuade and eliminate “islands” of networking.
  - Aims to drive the development, acceptance, and consistent implementation of the “end to end principle” of the Internet
- Security and Stability
  - Supports development and deployment of key technologies for ensuring a stable and secure Internet Infrastructure

The Internet Society (ISOC)
Trust & Identity

- In order to be trusted, the Internet must provide channels for secure, reliable, private communication between entities
- Architecture and Trust
  - Investigates the implementation of open-trust mechanisms throughout the full cycle of Internet research, standardisation, development and deployment

The Internet Society (ISOC) Trust & Identity

- Current Problems, Solutions and Trust
  - Investigates the mitigation of the social, policy and economic factors that may hinder development and deployment for trust-enabling technologies
- Identity and Trust
  - Investigates the elevation of identity to a core issue in network research and standards development

The Internet Society (ISOC) Public Policy

- Goal is to help work on policies that will benefit the entire Internet and those that use it
- Works with policymakers both on a regional and global level
- Chapters and members contribute by both helping to formulate ideas and messages, but also to deliver those messages to their respective government or regulatory bodies

The Internet Architecture Board (IAB)

- Started in 1984 as a replacement to the Internet Configuration Control Board (ICCB)
- Oversaw many task forces, but eventually focused on two: IETF and IRTF (Internet Research Task Force)

The Internet Architecture Board (IAB)

- IAB Responsibilities include:
  - Confirmation of IETF chair and IESG Area Directors
  - Architectural Oversight
  - Standards Process Oversight and Appeal
  - RFC Series and the IANA
  - External Liaison between IETF and other entities
  - Advice to ISOC
  - Selection of IRTF Chair

The Internet Corporation for Assigned Names and Numbers (ICANN)

- Established in 1998 as a global not-for-profit organization to manage functions that were previously performed by U.S. Government contractors
- Currently operates the IANA function
- Responsible for coordinating the management of the Internet domain name system (DNS)

The Internet Corporation for Assigned Names and Numbers (ICANN)

- Develops policies and procedures for DNS related activities:
  - New Top Level Domains
  - Accreditation of domain name registrars
- Is involved with Internet Governance because of the country-code TLDs
- Has many councils and advisory committees to assist with understanding relevant issues

Regional Internet Registries (RIRs)

- Allocate IPv4, IPv6 Addresses and Autonomous System Numbers (ASNs) to their respective regions
- Currently there are five (5) regions
- The RIRs have created the Number Resource Organization (NRO) to coordinate policies that have a global impact

The Internet Assigned Naming Authority (IANA)

- Came from the need to start recording unique identifiers on the Internet
  - Jon Postel's famous "black book"
- Was a function operated by the University of Southern California under contract with the U.S. Government until 1998 when it was moved to ICANN

The Internet Assigned Naming Authority (IANA)

- Works with the IAB and IETF as the repository of unique identifiers as described in RFCs and other documents
- Distributes blocks of IP addresses to the RIRs
- Manages the DNS Root Zone file
- Manages and operates various core DNS zones, such as .INT and parts of .ARPA

Regional Internet Registries (RIRs)

- Allocate IPv4, IPv6 Addresses and Autonomous System Numbers (ASNs) to their respective regions
- Manage the Whois Database (public information for the allocations)
- Authority on DNS records for their address space for reverse DNS resolution (number to name)
- Currently there are five (5) regions
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Regional Internet Registries (RIRs)

APNIC	Asia and Pacific
AfriNIC	Africa
RIPE NCC	Europe, Middle East, parts of Central Asia
LACNIC	Latin America and parts of Caribbean
ARIN	US, Canada and parts of Caribbean

Regional Internet Registries (RIRs)

- Allocation policies determined in-region through open policy development processes
- RIR communities are primarily made up from the ISP and large business sector and academia
- However, policy discussion is typically open for all individuals

Number Resource Organization (NRO)

- Comprised of the five RIRs, coordinates global allocation policies

Network Operating Groups (nogs) just to name a few…

- APNIC – Asia/Pacific Network Information Centre
- APOPS – Asia/Pacific Operators Forum
- APRICOT – Asia/Pacific Regional Internet Conference on Operational Technologies
- JANOG – Japanese Network Operators Group
- NZNOG – New Zealand Network Operators Group
- PACNOG – Pacific Network Operators Group
- SANOG – South Asian Network Operators Group
- NANOG – North American Network Operators Group
- AFNOG – African Network Operators Group
- EOF – European Operators Forum WG
- FrNOG – French Network Operators Group
- NordNog – Nordic Operators Group
- RIPE and RIPE NCC – Promote Wide Area Network Operators in Europe
- SwiNOG – Swiss Network Operators Group
- ARIN – the American Registry for Internet Numbers
- LACNOG – Latin American and Caribbean Network Operators Groups

Network Operators Groups

- Primary goal is to coordinate and distribute technical information relating to (mostly) backbone/ enterprise networking technologies and operational practices
- Act as a common ground for meeting peers within the network community
- Has ‘Birds of a Feather (BoF) sessions that cover relevant material to network operators.

_____NOG

- Focuses on information exchange between ISPs and network operators within a region
- Works to deliver key information and experiences to those who need it – the network operator
- Acts as a human networking opportunity so people can meet and interact with their peers and other companies. Critical for when things go bad on the network!

So… who's in charge??

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So… who's in charge??

- There is no "central" Internet authority
- Each organisation or community tends to specialise in a particular topic of interest or responsibility
  - For instance, the network operator groups tend to focus primarily on every day operational issues
  - The IETF focuses on protocol development and standards
- Overlap of interests are very common
- Information sharing is key to a successful Internet!

What's that mean to me?

- Participate!
- Your ideas and dialog really do make a difference in developing a globally inter-operable Internet
- Many new technologies coming out that really need participation from around the world (DNSSEC, IPv6, IDNs, etc)
- Understand the strengths and limitations of current Internet standards

Wait! There's more!

- Participate Globally! (can be remotely)
- Participate Locally!
  - Local ISOC Chapters
  - University Students Groups
  - Regional Workshops
  - LACNIC – LACNOG Meetings
  - Mailing Lists (Politicas, Seguridad, IPv6, etc.)
  - Other ideas? Share them!
- There are many opportunities to become involved!

Which group should I join?

- Depends on your personal or professional interest area
- Membership doesn't need to be limited to one
- Volume of information can be overwhelming
- Suggestion: Start with a focused approach on what is *most* important to you, and then branch out from there

So… who's in charge??