Internet Management and Tools

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Agenda

Internet domain names and IP numbers

- How are they managed?

- How do you get them?

  – Get your own domain

  – Get an IP address assigned (DHCP)

  – Find an IP address (DNS)

- Tools you can use to see what is going on

Internet addresses and Domain names

- Numeric addresses IP numbers are used internally
- Domain names must be mapped to IP numbers

  - Both must be Unique
  - Need to convert names to addresses

  We will discuss how both are assigned and how they are administered and how the conversion is done.

Management of the Internet

- The **Internet Corporation for Assigned Names and Numbers**

  ICANN's primary principles of operation have been described as helping preserve the operational stability of the Internet; to promote competition; to achieve broad representation of global Internet community; and to develop policies appropriate to its mission through bottom-up, consensus-based processes.   ICANN was created on September 18, 1998

- Lots of detail on the history can be found:
  - http://en.wikipedia.org/wiki/Icann
  - http://en.wikipedia.org/wiki/Internet_Protocol_Suite
  - http://www.livinginternet.com/

Who manages the Internet?
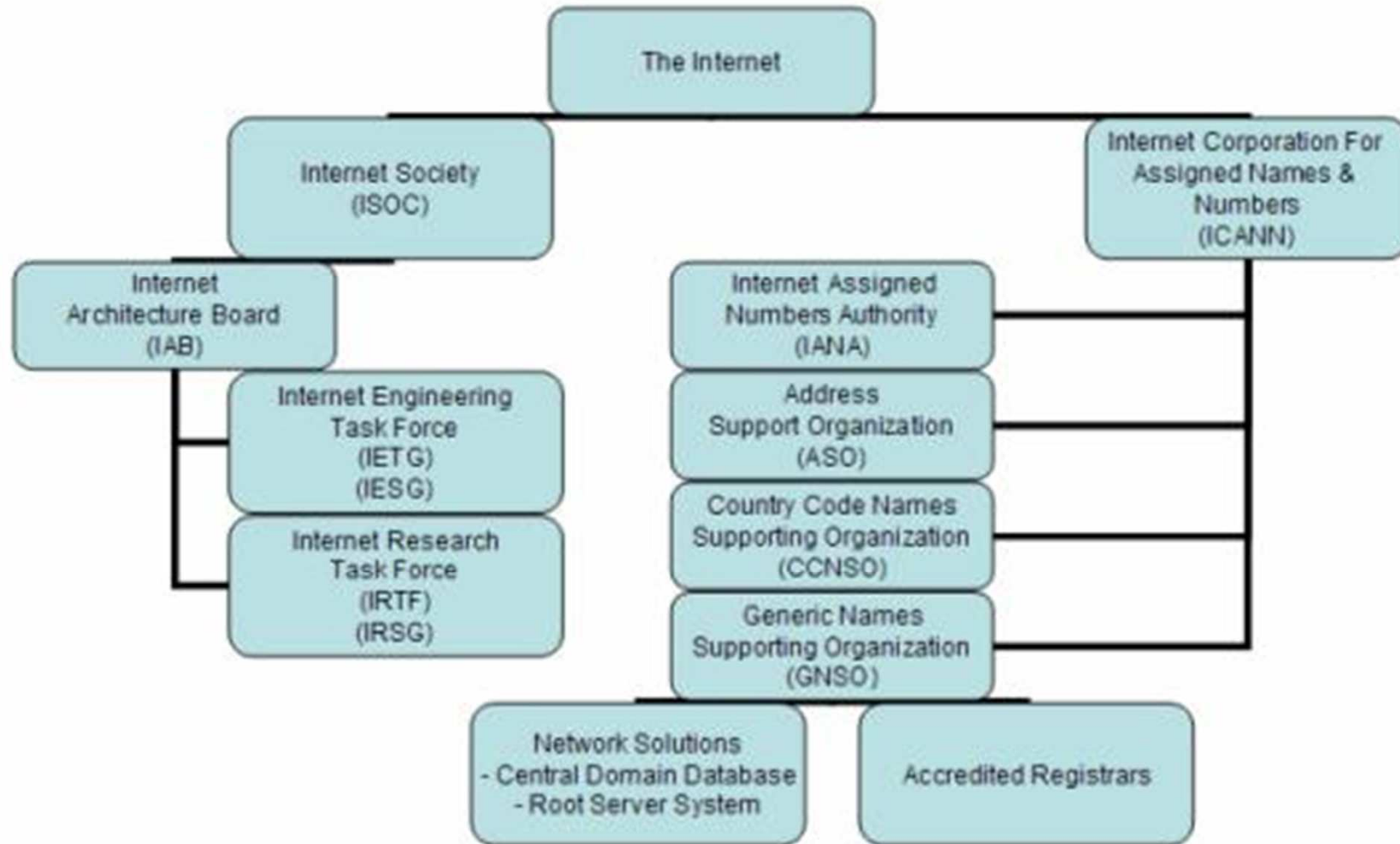
- Internic http://www.internic.net/ provides an information interface for the public.

- ICANN administers the business details.
  The ICANN FAQ is very helpful:
  http://www.icann.org/en/faq/

  Let's "walk" through it.

A few interesting sites:

- ICANN's accredited registrar list:
  http://www.icann.org/en/registrars/accredited-list.html

- IANA coordinates numbering
  http://www.iana.org/about/

- ARIN administers Regional Internet Registries (RIRs)
  https://www.arin.net/knowledge/rirs.html

- Country code domains:
  http://en.wikipedia.org/wiki/Country_code_top-level_domain

Before you get a Domain

Select a web hosting service (provides server)

Google led me to these rankings:

http://hosting-review.com/

http://www.consumer-rankings.com/hosting/

http://www.top10bestwebsitehosting.com/

You can use a private server, your own, or possibly one provided by your ISP.

Purchase Domain

- Most hosting companies are accredited registrars, or work with one.

- Pick a domain name that hasn't been taken.

- Can purchase an existing domain from a speculator and get it moved to your preferred registrar.

- Pay annual renewal fees (or in up to 10 years at a time).

IP address for mail and web server

- Host / registrar will submit IP information to DNS (Domain Name System) "name servers."
  http://en.wikipedia.org/wiki/Domain_Name_System

- Mail and Web servers can be different.

- Must be a static IP
  - Static IP doesn't change
  - Dynamic IP changes. Granted by DHCP. Solves "not enough IP numbers" problem.

Dynamic Host Configuration Protocol (DHCP)

- http://en.wikipedia.org/wiki/DHCP

- Not all devices are in use at any time, so temporary IP numbers are assigned from a pool of available numbers. Assignment can remain stable for months or only a short time.

- Router provides IP number. "NAT" managed by port# (as described by Paul).

NAT and IPv6

- IPv4 (32 bit) running out of address space.
  4.3 *BILLION* addresses have run out of space.
  Router tables for Network Address Translation
  ("temporary" solution) have become unwieldy.

- IPv6 (128 bit) will provide more addresses than
  we can imagine.
  665.570.793.348.866.943.898.599 per square
  meter of earth surface.

DNS Servers

- 13 Master (root) servers world-wide

- Local server usually provided by your ISP

- Can use other sources including "public servers." Some are listed here: http://www.tech-faq.com/public-dns-servers.html

- Demo: nslookup command

Additional tools to demo

- Nslookup

- Ping

- Tracert

- Ipconfig

- Speedtest (various)

- Network Tools http://nwtools.com/