ICANN Overview

Gulf Region Meeting
Dubai
June, 2001

Andrew McLaughlin
Chief Policy Officer and CFO
ICANN: The Basic Idea

ICANN = An Experiment in Technical Self-Management by the global Internet community
ICANN: The Basic Bargain

ICANN =

Internationalization of Policy Functions for DNS and IP Addressing systems

+ Private Sector (non-governmental) Management
What does ICANN do?

Coordinates policies relating to the unique assignment of:
- Internet domain names
- Numerical IP Address
- Protocol Port and Parameter Numbers

Coordinates the DNS Root Server System
- through Root Server System Advisory Committee
Says *The Economist*:

- “ICANN is in many ways a completely new institutional animal.”
- “It is a hybrid between an online community and a real-world governance structure, an untested combination.”
- “It is also a new type of international organisation: an industry trying to regulate part of itself, across the globe, with little or no input from national governments.”

(10 June 2000)
Domain names & IP addresses

- **Domain names** are the familiar, easy-to-remember names for computers on the Internet
  - e.g., amazon.com, icann.org, nic.or.kr

- Domain names correlate to **Internet Protocol numbers** (IP numbers) (e.g., 98.37.241.130) that serve as routing addresses on the Internet

- The **domain name system** (DNS) translates domain names into IP numbers needed for routing packets of information over the Internet
Types of Internet Domains

• Generic Top Level Domains (gTLDs)
  • <.com>, <.net>, <.org> open to all persons and entities on a global basis
  • <.int> for international treaty organizations
  • <.arpa> for Internet Infrastructure purposes
  • <.gov>, <.mil> for U.S. government, military
  • <.edu> for US universities
More Types of Internet Domains

- Country Code Top Level Domains (ccTLDs)
  - <.cn>, <.hk>, <.jp>, <.uk>, <.ca>, <.br>, <.de>, <.tv>, <.cc> . . .
  - Imprecise name: ccTLD includes *countries* and *geographically distinct territories*
  - Derived from ISO 3166-1 list
  - Registration requirements vary by domain
    - Residency requirement
    - Price (or no charge)
    - Ability to transfer
    - Dispute resolution policy
Basic DNS Registry Structure

Example: <.com>

ICANN
(= overall coordinator)

Registry
(= authoritative database of domain names and corresponding IP addresses)

Registrars
(= interact with customers/registrants; handle billing; place data in registry database; provide WHOIS service)

Registrants
(= domain name holders)

Root Zone File

Registry <.com>

Shared Registry System (SRS):

Registrar A

Registrar B

Registrar C
The DNS Tree

Root Zone File

TLDs
- uk
- ae
- co
- ac
- com
- org
- edu
- icann

Subdomains
- oxford
  - med
  - law
# List of the Root Servers

<table>
<thead>
<tr>
<th>name</th>
<th>org</th>
<th>city</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>NSI</td>
<td>Herndon, VA, US</td>
</tr>
<tr>
<td>b</td>
<td>USC-ISI</td>
<td>Marina del Rey, CA, US</td>
</tr>
<tr>
<td>c</td>
<td>PSI net</td>
<td>Herndon, VA, US</td>
</tr>
<tr>
<td>d</td>
<td>U of Maryland</td>
<td>College Park, MD, US</td>
</tr>
<tr>
<td>e</td>
<td>NASA</td>
<td>Mt View, CA, US</td>
</tr>
<tr>
<td>f</td>
<td>Internet Software C.</td>
<td>Palo Alto, CA, US</td>
</tr>
<tr>
<td>g</td>
<td>DISA</td>
<td>Vienna, VA, US</td>
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<tr>
<td>h</td>
<td>ARL</td>
<td>Aberdeen, MD, US</td>
</tr>
<tr>
<td>i</td>
<td>NORDUnet</td>
<td>Stockholm, SE</td>
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<tr>
<td>j</td>
<td>NSI</td>
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<td>k</td>
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<td>l</td>
<td>ICANN</td>
<td>Marina del Rey, CA, US</td>
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<tr>
<td>m</td>
<td>WIDE</td>
<td>Tokyo, JP</td>
</tr>
</tbody>
</table>
Map of the Root Servers
Root server architecture of today

- **Change decision**
  - ICANN/IANA
- **Verification**
  - US Department of Commerce
- **Update of the zone file:**
  - Zone file management (currently, at A)
  - Synchronized with the database
- **Distribution of the zone information**
  - To the rest of root servers
Improved root server architecture

• Dedicated primary to be responsible for the root zone
  – Will distribute to the 13 root servers
• Extensive technical deliberation and preparation
  – Improve system to be more secure, robust and reliable
  – Change will be transparent to users
• Existing root server operators have agreed
• ‘When’ is subject to operational readiness of the new structure
Internet Addressing - IPv4

- IPv4 = 32 bits
  - Example: <192.34.0.64>

- Initially, 256 networks ... then mix of:
  - Class A (128 with 16 M hosts)
  - Class B (16,384 with 65K hosts)
  - Class C (2M with 256 hosts)

- Now, Classless Inter-Domain addresses
  - Theoretically, up to 4 Billion hosts, hundreds of thousands of networks
Next Generation Internet - IPv6

- IPv6 = 128 bits of addressing
- Theoretically, $10^{38}$ hosts
- Significant transition effort needed
  - (Sort of like changing engines on the aircraft while in flight)
- IANA officially announced first allocations to RIRs (July 14, 1999)
Regional Internet Registries (RIR)

- **ARIN**
  - North America
  - Latin America
  - Caribbean Islands
  - Sub-Saharan Africa

- **RIPE NCC**
  - Europe
  - Middle East
  - North Africa
  - Parts of Asia

- **APNIC**
  - Most of Asia
  - Australia/New Zealand
  - Pacific Islands
Emerging RIRs

AfriNIC - Africa

LACNIC - Latin America/Caribbean
Most Internet DNS and IP Address coordination functions performed by, or on behalf of, the US government:

- **Defense Advanced Research Projects Agency (DARPA)**
  - Stanford Research Institute (SRI)
  - Information Sciences Institute (ISI) of University of Southern California
- **National Science Foundation (NSF)**
  - IBM, MCI, and Merit
  - AT&T, General Atomics, Network Solutions, Inc. (NSI)
- **National Aeronautics and Space Administration (NASA)**
- **US Department of Energy**
IANA

- “Internet Assigned Numbers Authority”
- A set of technical management functions (root management; IP address bloc allocations) previously performed by the Information Sciences Institute (ISI) at the University of Southern California, under a contract with the U.S. Government
- Includes protocol parameter and port number assignment functions defined by the Internet Engineering Task Force (IETF)
- Now a part of ICANN
Need for Change

- **Globalization** of Internet
- **Commercialization** of Internet
- Need for **accountability**
- Need for more **formalized management structure**
- Dissatisfaction with **lack of competition**
- Trademark/domain name **conflicts**
White Paper Principles

White Paper: new policy/management structure must promote 4 goals:

- Stability
- Competition
- Private, bottom-up coordination
- Representation
White Paper Implementation

- Internet community to form non-profit corporation meeting White Paper’s 4 criteria
- US Government (through Commerce Department) to transition centralized coordination functions
- Amendment of Network Solutions agreement to require competitive registrars in gTLD registries
- Request to WIPO to study & recommend solutions for trademark/domain-name conflicts
Status of Transition from USG

✓ 1998
  ✓ November - ICANN recognized in MoU

✓ 1999
  ✓ June - Cooperative agreement among ICANN, US Government, root server operators
  ✓ November - ICANN and Network Solutions (NSI) sign gTLD registry and registrar agreements; USG transfers root authority over gTLDs to ICANN

✓ 2000
  ✓ February - Contract with US Government to complete transfer of IANA functions
  ✓ November - Selection of 7 new Top-Level Domains

✓ 2001
  ✓ January - Transfer of InterNIC functions from NSI to ICANN
  ✓ May - Revision of com/net/org agreements with VeriSign
ICANN and Country TLDs

• Basic organizing principle: Local Internet communities make decisions about country code TLDs (ccTLDs)

• ICANN’s role
  – Very hands-off on policy
  – Basic responsibility to delegate ccTLD so as to serve the interests of the local and global Internet communities
  – Maintain stable root server system

• ccTLD managers’ role
  – Technically competent registry and nameserver operations
  – Commitment to administer as trustee for the local community (local laws, culture, customs, preferences, etc.)

• Local government’s role
  – Depends on the local situation
ICANN and Global TLDs

- For the global TLDs (such as .com, .net, .org), ICANN serves as the vehicle for consensus policy development.
- Examples of policies:
  - Competitive registrars
  - Uniform Dispute Resolution Policy
New Top-Level Domains

• First group chosen in November 2000
  – Global Open: <.info>, <.biz>
  – Individuals: <.name>, <.pro>
  – Specialized: <.museum>, <.aero>, <.coop>

• Proof of Concept - Launch with caution, observe carefully, learn from experience
  – Selection process was transparent & predictable

• If these are successful, there will be future rounds
  – Goal: Less burdensome, less expensive, more objective

• Biggest challenge: Launch phase
  – Intellectual Property & cybersquatting fears
  – Opening day rush; fairness to everyone

• Danger: Sleazy pre-registration offers (see FTC Warning)
Top Policy Objectives for Year 2001

• Successful introduction of New Top-Level Domains

• Completion of agreements:
  – ccTLD registry agreements
  – IP Address registry agreements
  – Root server operator agreements

• At Large Study

• DNSO Reform

• UDRP Review

• Whois policy review
Structure of ICANN
ICANN Organizational Chart

ICANN Board of Directors
(19 Members)

President and CEO
(Mike Roberts)

At Large Membership
(5 Directors Selected in October 2000)

Domain Name Supporting Organization
(Selects 3 Directors)

Business
Non-Commercial
cctLD Registries

gtLD Registries
ISPs
Registrars
Intellectual Property

Address Supporting Organization
(Selects 3 Directors)

ARIN
RIPE
NCC

Protocol Supporting Organization
(Selects 3 Directors)

IETF
(Internet Engineering Task Force)

W3C
(World Wide Web Consortium)

ITU-T
(International Telecommunication Union)

ETSI
(European Telecommunications Standards Institute)

Root Server System Advisory Committee
Governmental Advisory Committee
At Large Study Committee
Budget Advisory Group

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ICANN Board of Directors

At Large Directors:
• Karl Auerbach (USA)
• Ivan Moura Campos (Brazil)
• Frank Fitzsimmons (USA)
• Masanobu Katoh (Japan)
• Hans Kraaijenbrink (Netherlands)
• Andy Mueller-Maguhn (Germany)
• Jun Murai (Japan)
• Nii Quaynor (Ghana)
• Linda S. Wilson (USA)

ASO Directors:
• Rob Blokzijl (Netherlands)
• Ken Fockler (Canada)
• Sang-Hyon Kyong (South Korea)

DNSO Directors:
• Amadeu Abril i Abril (Spain)
• Jonathan Cohen (Canada)
• Alejandro Pisanty (Mexico)

PSO Directors:
• Helmut Schink (Germany)
• Vint Cerf (USA) - Chairman
• Phil Davidson (U.K.)
ICANN Staff

New Model: Lightweight
(minimal staff = minimal bureaucracy)

Current Staff:
- President and CEO (Mike Roberts, soon Dr. Stuart Lynn)
- Vice President/General Counsel (Louis Touton)
- Chief Policy Officer/CFO (Andrew McLaughlin)
- ccTLD Liaison (Herbert Vitzthum)
- Communications Director (Mary Hewitt)
- Registrar Liaison (Dan Halloran & Ellen Sondheim)
- IANA staff (Joyce Reynolds, Michelle Schipper, Bill Huang)
- Office Manager (Diane Schroeder)
- Network Administrator (Jim Villaruz)
At Large Elections 2000

- Free and open to anyone with a verifiable email address and physical address
- Over 158,000 registered to vote; over 70,000 voted
- 5 Directors elected from 5 different regions
  - North America, Latin America, Europe, Africa, and Asia/Australia/Pacific
- Problems: Nationalism, capture, outreach
At Large Study

- Next steps: Study the process, draw lessons, redesign for the future
  - Chair of study committee: Hon. Carl Bildt (Sweden)
  - Vice-chairs: Pindar Wong (Hong Kong S.A.R., China) and Charles Costello (USA, Carter Center)

- <http://www.atlargestudy.org>
Lessons from the Experiment?

• Private-sector self-management is possible, if narrowly chartered

• Global consensus on policy is difficult to define; even harder to achieve
  – Consensus is a tradition in the technical community in which ICANN is rooted, because you can test solutions & refer to objective data
  – Consensus on policy questions can be elusive, because it depends upon subjective values
Message to You:

BE INVOLVED!!!

Consensus means you have to show up to be heard.

www.icann.org
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http://www.icann.org