Internet Assigned Numbers Authority - 101

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What is ICANN's IANA?

Internet Assigned Numbers Authority

One of the oldest Internet institutions, its role dates back to 1970s

1998, ICANN established in part to act as the steward for the IANA functions

2010, IANA may refer to the department within ICANN that operates the IANA functions or to the functions themselves

Why is IANA needed?

IP addresses

Domain Names

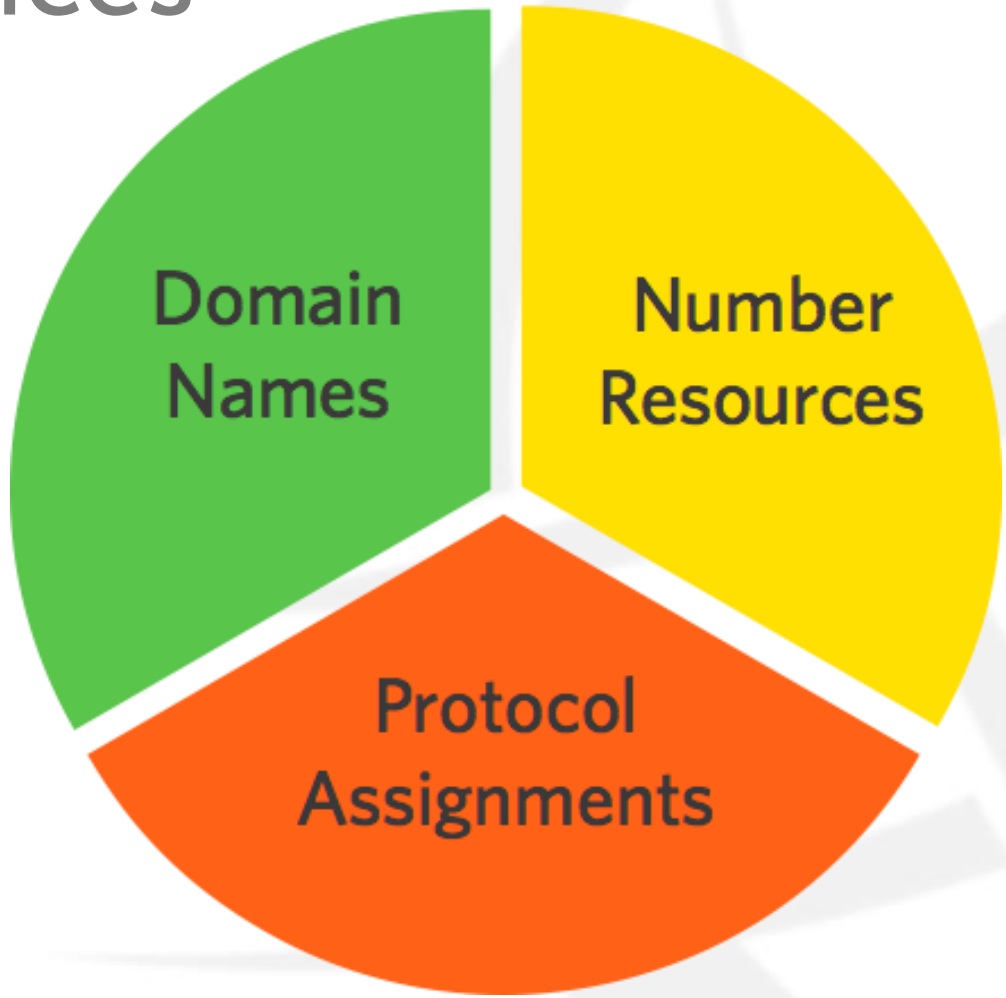
Protocol Parameters

The Internet is a global system of interconnected computer networks

A common set of identifiers and numbers for computers to talk to one another is necessary for the system to interoperate

ICANN's IANA team administers and allocates the unique identifiers needed to ensure the global interoperability

IANA services



Number Resources

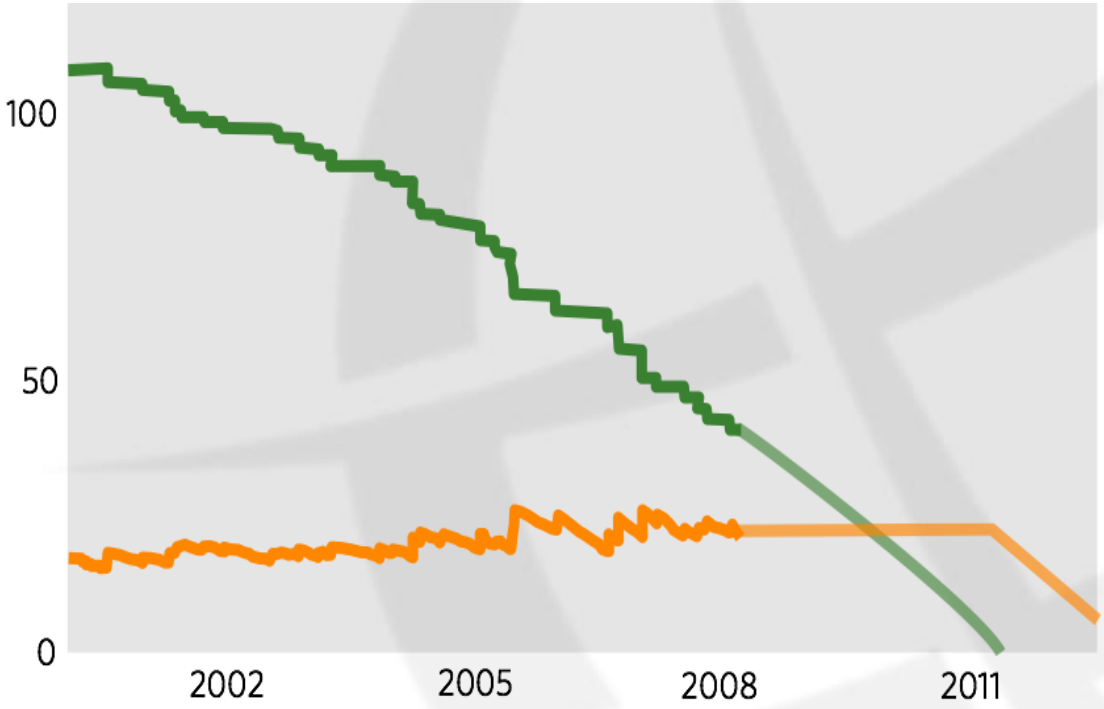
IANA Subject Matter Expert

Leo Vegoda

- Internet Protocol (IP) Addresses
  - Unique identifier for each computer connected to the public Internet
  - Version 4 — almost gone (last blocks will be allocated in 2011)
  - Version 6 — early deployments and transition from v4
- Autonomous System (AS) Numbers
  - Unique identifier for each network that cross-connects with other networks

IPv4 Availability

Green = IANA
Orange = RIRs



IPv6 in a nutshell

- 128-bit address space
  - 340,282,366,920,938,463,463,374,607,431,768,211,456 addresses
- IANA still has lots in reserve

How we manage the root zone

IANA Root Zone Management Specialists

Kim Davies
Nadia Sokolova

- Maintain data for the DNS root
  - Technical data (NS records, “glue”)
  - Social data (admin and tech contacts, sponsoring organizations, WHOIS, Registration URLs)
- Two types of changes
  - Routine (easy)
    - Confirm authenticity, check for technical problems, implement
  - Redelegations (hard)
    - Perform evaluation, submit to ICANN board, implement as appropriate.

DNSSEC in the Root Zone

IANA DNSSEC Team

Joe Abley
Mehmet Akcin
David Knight
Tomofumi Okubo

- Manages the Key Signing Key (KSK)
- Host quarterly Key Signing Ceremonies
- Publishes trust anchors in the root

What IANA Function doesn't do

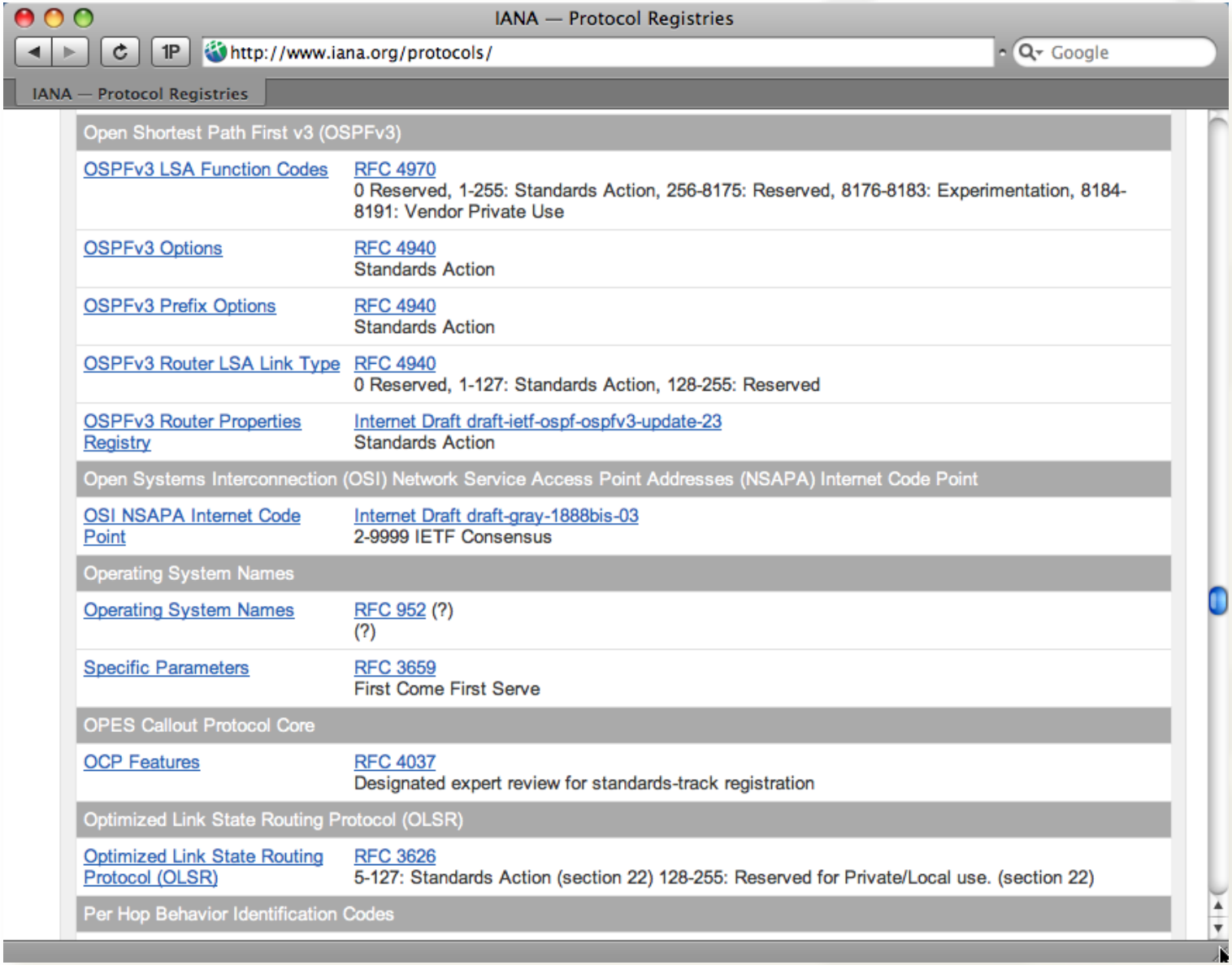
- Doesn't set policy
  - We follow precedent where possible, encourage review of our operations by the community.
- Doesn't decide what country codes should be
  - ISO 3166-1 standard provides these
- Doesn't decide who runs a ccTLD
  - Follows guidance in RFC 1591
  - IANA performs due diligence to ensure requests supported by local community view

Protocol Parameters

IANA Protocol Registries Specialists

Michelle Cotton
Pearl Liang
Amanda Baber

- IANA maintains the Protocol Registries
- Most unique identifiers are allocated directly by IANA to protocol developers and/or end users
- Number Resources and Domain Names are just specialized cases of protocol parameter assignments



Open Shortest Path First v3 (OSPFv3)	
OSPFv3 LSA Function Codes	RFC 4970 0 Reserved, 1-255: Standards Action, 256-8175: Reserved, 8176-8183: Experimentation, 8184-8191: Vendor Private Use
OSPFv3 Options	RFC 4940 Standards Action
OSPFv3 Prefix Options	RFC 4940 Standards Action
OSPFv3 Router LSA Link Type	RFC 4940 0 Reserved, 1-127: Standards Action, 128-255: Reserved
OSPFv3 Router Properties Registry	Internet Draft draft-ietf-ospf-ospfv3-update-23 Standards Action
Open Systems Interconnection (OSI) Network Service Access Point Addresses (NSAPA) Internet Code Point	
OSI NSAPA Internet Code Point	Internet Draft draft-gray-1888bis-03 2-9999 IETF Consensus
Operating System Names	
Operating System Names	RFC 952 (?) (?)
Specific Parameters	RFC 3659 First Come First Serve
OPES Callout Protocol Core	
OCP Features	RFC 4037 Designated expert review for standards-track registration
Optimized Link State Routing Protocol (OLSR)	
Optimized Link State Routing Protocol (OLSR)	RFC 3626 5-127: Standards Action (section 22) 128-255: Reserved for Private/Local use. (section 22)
Per Hop Behavior Identification Codes	

Protocol Assignments

- All protocol assignments are free
- Eligibility criteria varies, usually either open-to-all, or requires standard action to implement
- Some popular registries have automated or specialized approaches to allocation
  - Private Enterprise Numbers
  - Port Numbers
  - etc.

Major Projects Underway

Project Leads

Joe Abley
Michelle Cotton
Kim Davies
Barbara Roseman
Leo Vegoda

- Root zone automation project (with VeriSign)
- Operational readiness work for new TLDs (gTLDs)
- Business excellence project
- Business continuity project
- DNAME project

State of IANA Functions Contract

- **Current contract was up for renewal on September 30, 2011. NTIA has extended it for to six months.**
- For the first time, NTIA released a Notice of Inquiry on the IANA contract. At the close of the comment period NTIA received approximately 80 responses.
- **ICANN's comments to NOI laid out four primary objectives:**
  - Change from one-year procurement contract to longer-term agreement
  - Require transparency and accountability in next agreement, particularly for root updates
  - Refrain from expanding the scope of services covered by the contract
  - Put in place pathway toward transition of IANA functions to ICANN as called for in the 1998 White Paper
- On June 14th a Further Notification of Inquiry (FNOI) was published. Responses are due to NTIA within 45 days of June 14th.

Summary

IANA Functions are performed under a contract with NTIA.

- IANA, a fuction of ICANN, allocates IP addresses, administers the data in root zone and maintains the protocol registries
- Most IANA registries are are generally invisible to the end-user
- ICANN's IANA maintains the infrastructure that keeps the Internet interoperating

Thank You