Responsible Distribution of Internet Numbering Resources over the Years

Prepared by Regional Internet Registries
APNIC, ARIN, LACNIC and RIPE NCC
Overview

- History & Evolution
- Structure
- IP Address Management
- Development of Internet Number Resource Management Policies
“The assignment of numbers is also handled by Jon. If you are developing a protocol or application that will require the use of a link, socket, port, protocol, or network number please contact Jon to receive a number assignment.”
1992

RFC 1366
Geographic Allocations
Emerging RIR

[Map showing the American Registry for Internet Numbers (ARIN), LACNIC, APNIC, and RIPE NCC regions]
Structure

The RIR System
Not-For-Profit

- Membership / Service Fee
- Open Financial Reporting

Structure

Participation
- Open to All Interested Parties
- Consists of Thousands
  - ISPs
  - Other Companies
  - Stakeholders

Members
- Elect Executive Board
- Approve Budget & Activities
Internet Number Resource Allocation

Services

Policy Development

• Email Discussion Lists
• Open Policy Meetings
• Publication of Policy Documents

Member

• Meetings
• Elections
• Web Portal
• Information
• Training

• IPv4 & IPv6
• AS Numbers
• Whois Directory
• Internet Routing Registry
• Reverse DNS
  – In-addr.arpa
  – Ip6.arpa

IPv4 & IPv6
AS Numbers
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ASO Support

- ASO Secretariat
- ASO AC Support
- General Assembly

Activities

Outreach
- Meetings and Presentations
  - Government representatives
  - Industry groups
  - IPv6 Forum
- Training Programs

Coordination
- Registration Services
- Policy
- Documentation
- Engineering
- Outreach
- Presentations
Number Resource Organisation

http://www.nro.org
Strong Operational Co-ordination

- NRO Executive Council
- NRO Secretariat

Goals

Facilitate ICANN ASO
- NRO Number Council
- Offer to ICANN to function as ASO

One Entry Point into RIR System
IP Address Management

The RIR System
IP Addressing

• What is an IP Address?
• How is IP Address Space Managed?
What is an IP Address?

- A Number Used for Routing
- Not Dependent on Domain Name System
- A Finite Public Resource
- Not Owned
- IP Does Not Mean “Intellectual Property”
How is IP Address Space Managed

• Address Space Management Objectives
• Implementation of Policy
Address Management Objectives

Conservation
- Efficient Use of Resources
- Allocation Based on Need

Aggregation
- Limit Routing Table Growth
- Support Provider-Based Routing Policies

Registration
- Ensure Uniqueness
- Facilitate Trouble Shooting
Policy Implementation
[ Industry Self-Regulation ]

• RIR Staff
  – Publish Policy Documents
  – Publish Procedure Documents
  – Implement Policy

• ISP/LIR
  – Develop Internal Procedures
  – Implement Policy
Internet Number Resource Management
Policy Development
[Industry Self-Regulation]

The RIR System
How is IP Address Policy Developed?

- According to Policy Development Principles
- In a Cyclical Manner
Policy Development Principles

- **Transparent**
  - Mail List Archives
  - Minutes
    - Policy Fora
    - RIR Boards

- **Open**
  - Anyone Can Participate
  - Policy Fora
  - Mail Lists

- **Documented**
  - Formal Policy Documents
  - Implementation Procedures

- **Developed Bottom-Up**
  - Internet Community
  - Stakeholders
  - Technology Changes
  - IETF
Policy Development Cycle

Need → Discuss → Consensus → Implement → Evaluate → Need

- Email Lists
- Open Policy Meetings
- Technology Changes
- Industry Requirements
- Structured Assessment Process
- Effect on Industry Interaction with Technology

Put Into Practice
- Staff
- ISP/LIR
Common Misconceptions about IP Allocation Issues

- IPv4 address exhaustion is imminent.
- Regional Address Registries are obstructing IPv6 deployment
- Digital Divide between address-rich and address-poor Countries
  - Newcomers cannot get addresses anymore
- Regional Address Registries advocate NAT

Visit the source for address statistics / policies.
Take part in policy making process.
We offer workshop for any interested party.
Upcoming Public Policy Meetings

- ARIN (2 per year)
  18-21 April, ARIN XIII, Vancouver, Canada
- LACNIC (2 per year)
  29 April, 1 March, LACNIC VI, Montevideo, Uruguay
- RIPE NCC (2 per year)
  3-7 May, RIPE 48, Amsterdam, Netherlands
- APNIC (2 per year)
  Aug / Sep, APNIC 18, Asia Pacific Region (tba)
Links to RIR Statistics

Raw Data/Historical RIR Allocations:

http://www.aso.icann.org/rirs/stats/index.html
http://www.iana.org/assignments/ipv4-address-space

RIR Stats:

http://www.apnic.net/info/reports/index.html
http://www.arin.net/statistics/index.html
http://www.ripe.net/ripencc/pub-services/stats
THANK YOU

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