Post IPv4 Depletion Trends

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Current Trends

• The need for IPv4 is still great
  – Seeing increased activity in transfers/transfer market, waiting list, pre-approvals and STLS

• Increase in hijackings/attempted hijackings (mostly legacy space)
  – ~25 hijackings reported or discovered since ARIN depleted its free pool in Sept 2015 (includes both successful and attempted)
  – In contrast, ~50 verifiable hijackings between 2005 and 2015

• Finding fraud “rings” that started their activity just prior to IPv4 depletion
  – Set up shell companies in order to hoard IPv4 address space for spamming and/or selling
Evolving Behavior

• See more attempted hijackings at ARIN
  – Hijacking - unauthorized changes made to database records to gain control of IP resources
    • Find dormant registration records in Whois (typically legacy)
    • Check routing
    • Re-register expired domain names
    • Re-register defunct business names
    • Go through a series of registration record modifications pretending to be the original registrant
    • Ultimate goal is likely to sell the IP addresses and transfer them

• Reports of more route hijackings (unauthorized use of IP addresses)
  – Hijackers bringing forged LOAs to ISPs to get them to route the space
Hijacking Targets
ARIN Issued vs Legacy

Legacy IPv4 nets are less likely to have at least one validated POC

**Validated POC** – has either responded to ARIN’s annual POC validation email or updated their POC record within the past 12 months

**There are a total of 345,837 /24s contained in the legacy networks with no validated POC**
What Can You Do To Protect Your Whois Data?

• Keep your Whois information updated and accurate

• Respond to ARIN’s annual POC validation request*
  – Either confirm registration information is correct or submit updated contact information to ARIN

*https://www.arin.net/policy/nrpm.html#three6
Request Activity

- **IPv4 Requests**
  - **Decreasing:** IPv4 free pool tickets
  - **Increasing:** Pre-approvals and Specified Recipient transfers (NRPM 8.3)

- **Change of Authority Requests**
  - **Increasing**
    - Merger & Acquisition transfers (NRPM 8.2)
    - Specified Recipient transfers (NRPM 8.3)
    - ORG Recovery Requests

- **IPv6 Requests**
  - **Steady** ticket traffic
IPv4 Requests – Past Year

Waiting list initiated
IPv4 depletion

IPv4 Waiting List Growth

**IPv4 depletion**

- Waiting list initiated
- IPv4 depletion

**Graph Details:**
- X-axis: Months from Jun-15 to Apr-16
- Y-axis: Waiting list growth from 0 to 400
- IPv4 depletion marked on the graph.
Transfers of IPv4 Addresses

3 ARIN Transfer Policies Available:

– Mergers and Acquisitions (NRPM 8.2)
  • Traditional transfer based on change in business structure, including company reorganizations, supported by legal documentation

– Transfers to Specified Recipients (NRPM 8.3)
  • IPv4 market transfer based on financial transaction, supported by justified need (within region)

– Inter-RIR transfers to Specified Recipients (NRPM 8.4)
  • IPv4 market transfer based on financial transaction, supported by justified need (outside region)
Completed Specified Recipient Transfers (NRPM 8.3)

- Waiting list initiated
- IPv4 depletion

Month:
- May-15
- Jun-15
- Jul-15
- Aug-15
- Sep-15
- Oct-15
- Nov-15
- Dec-15
- Jan-16
- Feb-16
- Mar-16
- Apr-16
IPv6 Requests – Past Year

Waiting list initiated
IPv4 depletion

ISP Members with IPv4 and IPv6

*5,332 total members as of 30 April 2016
IPv6 Adoption Rate by ISP Size

<table>
<thead>
<tr>
<th>ISP Size</th>
<th>Orgs w/o IPv6</th>
<th>Orgs w/ IPv6</th>
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