State of the IPv4 Address Market

Sunday, 15 January 2023
Panelists

• Moderator: John Curran (ARIN)

• Panel:
  • Paul Wilson (APNIC)
  • Lee Howard (IPv4.Global by Hilco Streambank)
  • William Sylvester (Addrex)
  • John Sweeting (ARIN)
Overview

• State of the RIR Transfer Policies & Related Statistics
• Transfer Market Size and Price Trends
• Things to Watch Out For with Transfers
• Q&A
APNIC Transfer Policies and Statistics
Paul Wilson
APNIC
APNIC Transfer Policies

• “Market Transfers”
  • Prop-050 (2010) allows transfer of IPv4 addresses between APNIC members
  • Prop-095 (2011) allows inter-RIR transfers
  • Prop-107 (2014) allows transfer of AS numbers
  • Requires demonstration/justification of need

• Mergers and Acquisitions
  • Transfer due to a change in business structure such as a merger, acquisition, or reorganisation

• Historical Internet number resources
  • Transfer of historical IPv4 addresses and/or AS numbers from verified custodians
  • Demonstrated need is not required
  • Transferred resources become “current”
Market Transfers into APNIC (/24s)
Market Transfers into APNIC
Market Transfers from APNIC (/24s)

Last 10 years IPv4 transfers from APNIC by end of December 2022

- East Asia, 811
- Oceania, 2,217
- South Asia, 4,488
- South East Asia, 3,138
- ARIN, 4,478
- RIPE, 6,176

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Market Transfers from APNIC

Note: first outgoing transfer was in 2015
Market Transfers within APNIC (/24s)

Last 10 years IPv4 transfers within APNIC by end of December 2022

East Asia, 74,840
East Asia, 89,493
Oceania, 69,104
Oceania, 5,911
South Asia, 13,115
South Asia, 22,760
South East Asia, 25,991
South East Asia, 64,886
Market Transfers within APNIC

by end of December 2022

Transfer size vs. Transfer count

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000

Transfer size  Transfer count

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Market Transfers Top 10 Economies by Transfer Size

Last 10 years by end of December 2022

Top 10 Source

- AU
- CN
- JP
- IN
- SG
- HK
- TH
- ID
- MY
- NZ

Top 10 Recipient

- SG
- CN
- JP
- IN
- HK
- AU
- TH
- PH
- MY
- ID

Source: [PTCCouncil](#PTC23)

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Market Transfers Top 10 Economies by Transaction Count

Last 10 years by end of December 2022

Top 10 Source

IN  CN  JP  AU  HK  ID  BD  NZ  SG  TH

Top 10 Recipient

IN  CN  JP  HK  AU  SG  ID  TH  BD  NZ
Factors Affecting Transfers

• Market transfers into APNIC region have remained static
  • Due to the availability of IPv4 in the APNIC pool?
• Market transfers out of the region have increased considerably
  • For the same reason?
• We expect an increase in market transfers as “last /8” IPv4 resources acquired from late 2017 are now transferrable after 5 years (policy Prop-116)
• Inter-RIR transfers are still a largely manual process, but RIRs are working on automation
  • Recent improvements have reduced ROA downtime during transfers (make before break)
ARIN Transfer Policies and Statistics

John Sweeting
ARIN
ARIN Transfer Policies

Mergers and Acquisitions (NRPM 8.2)

Traditional transfer from merger, acquisition, or reorganization supported by legal documentation

Transfer to a Specific Recipient (NRPM 8.3)

IPv4 Market Transfer from one organization to another that it specifies, supported by justified need (within the region)

Inter-RIR to a Specified Recipient (NRPM 8.4)

IPv4 Market Transfer from one organization to another that it specifies, supported by justified need (between regions)
Mergers & Acquisition (NRPM 8.2) 2018-2022

# 8.2 Transfer Completed
Total /16 Equivalents Transferred
Need-Based In-Region (NRPM 8.3) Transfers 2018-2022

<table>
<thead>
<tr>
<th>Year</th>
<th># 8.3 Transfers Completed</th>
<th>Total /16 Equivalents Transferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>881</td>
<td>656</td>
</tr>
<tr>
<td>2019</td>
<td>893</td>
<td>432</td>
</tr>
<tr>
<td>2020</td>
<td>922</td>
<td>271</td>
</tr>
<tr>
<td>2021</td>
<td>887</td>
<td>301</td>
</tr>
<tr>
<td>2022</td>
<td>726</td>
<td>464</td>
</tr>
</tbody>
</table>
Need-Based In-Region Block Sizes (NRPM 8.3) 2018-2022

<table>
<thead>
<tr>
<th>Year</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>/24</td>
<td>1,987</td>
</tr>
<tr>
<td>/23</td>
<td>730</td>
</tr>
<tr>
<td>/22</td>
<td>715</td>
</tr>
<tr>
<td>/21</td>
<td>473</td>
</tr>
<tr>
<td>/20</td>
<td>442</td>
</tr>
<tr>
<td>/19</td>
<td>319</td>
</tr>
<tr>
<td>/18</td>
<td>182</td>
</tr>
<tr>
<td>/17</td>
<td>98</td>
</tr>
<tr>
<td>/16</td>
<td>831</td>
</tr>
<tr>
<td>/15</td>
<td>45</td>
</tr>
<tr>
<td>/14</td>
<td>36</td>
</tr>
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<td>/13</td>
<td>10</td>
</tr>
<tr>
<td>/12</td>
<td>17</td>
</tr>
<tr>
<td>/11</td>
<td>1</td>
</tr>
<tr>
<td>/10</td>
<td>6</td>
</tr>
</tbody>
</table>

# Blocks
### Inter-RIR (NRPM 8.4) Transfers - 2018-2022

<table>
<thead>
<tr>
<th>Year</th>
<th># 8.4 Transfers to ARIN</th>
<th>/16 Equivalents Transferred to ARIN</th>
<th># 8.4 Transfers from ARIN</th>
<th>/16 Equivalents Transferred from ARIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>132</td>
<td>119.9</td>
<td>17</td>
<td>0.5</td>
</tr>
<tr>
<td>2019</td>
<td>64</td>
<td>4.5</td>
<td>106</td>
<td>60</td>
</tr>
<tr>
<td>2020</td>
<td>60</td>
<td>60</td>
<td>105</td>
<td>3.6</td>
</tr>
<tr>
<td>2021</td>
<td>98</td>
<td>3.7</td>
<td>186</td>
<td>26.8</td>
</tr>
<tr>
<td>2022</td>
<td>143</td>
<td>47.3</td>
<td>103.9</td>
<td>41.8</td>
</tr>
</tbody>
</table>
ARIN Transfer Summary

- Marked increase in Inter-RIR volume
- Processing time is stabilizing
- Transfer activity increasing LRSA coverage
- Most specified transfer blocks are small
Transfer Market Size and Price Trends
Lee Howard
IPv4.Global by Hilco Streambank
IPv4 Market Size

Number of Addresses

- 2015: 60,000,000
- 2016: 30,000,000
- 2017: 50,000,000
- 2018: 70,000,000
- 2019: 40,000,000
- 2020: 50,000,000
- 2021: 40,000,000
- 2022: 60,000,000

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IPv4 Market Size
IPv4 Market Prices (USD)

IPv4 Market Prices (USD)

Source: IPv4.Global
Things to Watch Out For with Transfers

William Sylvester
Addrex
Adventures in Transfers

• Make sure your rights are contractually protected
• Verify that you’re legally allowed to do business (FCPA, Sanctions, Do Not Trade)
• Verify that the seller actually has the rights to sell
• Require escrow to protect both parties
• Require Successful Registry Update prior to closing transaction
When is the Transfer Done?

• This typically means that the Whois for the appropriate registry is updated to reflect the buyer's information and control of the block
• Any necessary contracts with the registry have been signed
• The registry has accepted the custody documentation provided
• In the end if you properly configure RPKI on your network block through the registry your transfer is complete
• If you’re a seller, this is the time when you expect to be paid
Sellers Beware!

• Using escrow means you have either your numbers or you got paid
• Get control of your numbers in the registry prior to a transaction
• Some sellers are exceptional... others not so much. Be wary of sellers requiring you to transfer the block first and get paid later
• Don’t believe all the prices you read searching the Internet
• Verify your buyers is legal for you to conduct business
• As a Seller you may only do this once, get experienced help with professionals who can guide you through the process
Things to be Wary of for Buyers

• Start early when acquiring space, especially for /17 or larger
• Know the providence and custody of the block(s) you are purchasing
• Verify the registry shows the seller you are working with
• Escrow ensures you have money or your new block
• Make sure the registry is updated prior to closing transactions
Thank you.

Questions?