IPv6 Deployment Survey

Based on responses from the global RIR community during June 2010

- Maarten Botterman
Why IPv6 Deployment Monitoring?

• The Internet has become a fundamental infrastructure, worldwide, for economic and social activity, and its usage continues to grow exponentially:
  • More users
  • New applications (eg mobile, RFID etc)

• The transition from IPv4 to IPv6 is the only sustainable option, in the long run.
• A smooth transition requires understanding the challenges, and a timely start.
Aim is to establish the best possible comprehensive view of present IPv6 penetration and future plans of IPv6 deployment.

Best way to establish this is to ask the Internet providers and users, basically: the RIR communities around the world.

ARIN carried out such a survey with its members in March 2008, a starting point for the currently proposed survey.

RIPE NCC and APNIC carried out this same survey in 2009. In 2010, all RIRs participated to the survey:
- Survey was prepared and carried out by TNO/GNKS in close collaboration with RIPE NCC, APNIC, ARIN, AFRINIC and LACNIC.
- Survey was kept short, and focused on essentials.
- Privacy is guaranteed.

Results of 2010 will be compared with those of 2009 to get a good picture of progress.
This presentation is the summary report on 2010 results

A comparison with 2009 survey results will be made available shortly, as well
Q1 - Response to questionnaire

• 1589 respondents from 140 countries/economies
  • 15 countries > 30 respondents = 919
  • 25 countries 7< x < 30 respondents = 395
  • 28 countries 3< x < 8 respondents = 158
  • 31 countries with 2 or 3 respondents = 75
  • 42 countries with 1 respondent = 42

• Top 10 respondent countries

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>214</th>
<th>Russia</th>
<th>68</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Australia</td>
<td>89</td>
<td>Brazil</td>
<td>47</td>
</tr>
<tr>
<td>3.</td>
<td>Germany</td>
<td>81</td>
<td>France</td>
<td>45</td>
</tr>
<tr>
<td>4.</td>
<td>UK</td>
<td>74</td>
<td>New Zealand</td>
<td>45</td>
</tr>
<tr>
<td>5.</td>
<td>Netherlands</td>
<td>71</td>
<td>Czech Rep.</td>
<td>42</td>
</tr>
</tbody>
</table>
Q2 - Respondent categories

Check the category which best describes your organization.

- ISP (58%)
- ICT/Internet tools industry
- Internet content industry
- Non ICT/Internet (supply) industry
- Government (local, state, or international)
- Research and Development
- Education
- Other (please specify)

source: TNO/GNKS 2010
What is your organization's financial status?

- Profit: 77%
- Nonprofit/Not for Profit: 23%
Q4 – To which RIR does your country/economy belong?

To which RIR does your country/economy belong?

- RIPE NCC: 48.2% (766 responses)
- APNIC: 19.5% (310 responses)
- ARIN: 15.7% (249 responses)
- LACNIC: 8.7% (138 responses)
- AFRINIC: 6.8% (108 responses)
- Don't know: 1.1% (18 responses)

Q5 - Has your organization signed a Registration Services Agreement with your RIR?

<table>
<thead>
<tr>
<th>Q 5 Service Agreement with RIR?</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>56.6%</td>
<td>899</td>
</tr>
<tr>
<td>No</td>
<td>10.8%</td>
<td>171</td>
</tr>
<tr>
<td>Don't know</td>
<td>32.7%</td>
<td>519</td>
</tr>
</tbody>
</table>
Q6 – How large is your customer base

- Up to 1,000: 29.4%
- 1,001 to 10,000: 9.2%
- 10,001 to 100,000: 5.8%
- 100,001 to 500,000: 18.9%
- 500,001 to 1,000,000: 2.7%
- More than 1,000,000: 9.2%
Q7 - What percentage of your customer base uses IPv6 connectivity?

- 59.6%
- 30.4%
- 0%
- 0.5%
- 1.0%
- 2.0%
- More (fill in %):
Q8 - Do you consider promoting IPv6 uptake to your customers?

- Yes: 57.6%
- Maybe: 32.7%
- No: 9.7%
Q9 - What is the size of your organization?

- 40.5% Small (50 employees or less)
- 23.5% Medium (51 up to 250 employees)
- 19.1% Large (251 up to 2,500 employees)
- 16.9% Very Large (more than 2,500 employees)
Q10 - Does your organization have, or consider having an IPv6 allocation and/or assignment?

Yes: 84.3%
No: 15.7%
Q11 - Why doesn’t your organization consider having an IPv6 allocation/assignment?

Please note these are responses from the 16% indicated to not consider having an IPv6 allocation/assignment.
Q13 - What motivated your organization to consider having an IPv6 allocation/assignment?

Want to be “ahead of the game” and expect to meet future needs (70%)
To make sure IPv6 is supported in our products (60%)
Availability of IPv4 address space (50%)
Want to benefit from the advantages of IPv6 as soon as possible (50%)
Customer demand (30%)
Other (please specify) (10%)

Please note these are responses from the 84% indicated to have or consider having an IPv6 allocation/assignment.
Q12 - what you expect to be the biggest hurdle(s) to your organization if you were to deploy IPv6?

Please note these are responses from the 14% indicated to not consider having an IPv6 allocation/assignment
Q16 - What are likely to be the biggest hurdle(s) when deploying IPv6?

- Vendor support
- Availability of (knowledgeable) staff
- Costs (required financial investment/time of staff)
- Business case (including user demand) explanation to non-technical business decision makers
- Information security
- Other (please specify)
- Don’t know

Please note these are responses from the 84% indicated to have or consider having an IPv6 allocation/assignment.
Q15 - Does your organization have an IPv6 presence?

- No
- Yes, both within internal networks and on the Internet
- Yes, only within internal networks
- Yes, only on the Internet
Q17 - What are the biggest problems with IPv6 in production?

- Lack of user demand
- No experience, yet
- Technical problems
- Budget issues: convincing non-technical business responsible people for getting it
- Other (please specify)
- Budget issues: no access to investment money due to scarcity of resources
Q18 - your organization’s IPv6 setup

- 87.1% Dual-stack
- 10.9% Separate infrastructure for IPv4 and IPv6
- 2.0% Only IPv6
Q19 - nature of your organization’s IPv6 production services

74.6% Native IPv6
17.2% Tunneled IPv6 (excluding automatic tunneling)
3.0% Automatic tunneling
5.1% Address Translation (like NAT)
Q20 - If your organization has IPv6 in production, how does the amount of IPv6 traffic compare to your IPv4 traffic?

- 81.2% IPv6 traffic is insignificant
- 16.3% IPv6 traffic is non-negligible but less than IPv4 traffic
- 1.9% IPv6 traffic is same as IPv4 traffic
- 0.5% IPv6 traffic is greater than IPv4 traffic
Q22 - Which best describes your organization’s IPv6 implementation (plans)?

[Bar chart showing deployment plans for various IPv6 services and network components, with color coding for different deployment timelines.]

- We have no plans
- Deploy – more than 4 years
- Deploy – more than 2 years
- Deploy – more than 1 year
- Deploy – 6 months to 1 year
- Deploy – 1 to 6 months
- Currently Deployed
Main preliminary conclusion

• More respondents do or plan to do IPv6 as compared to 2009, as is clear from the responses on multiple questions.
• User demand and experience have gone up, still similar amount of technical problems with implementation.
• Main hurdles for those who implement is still vendor support, for those who don’t implement the expectations of costs.
• Overall: more implementation, planning of implementation, awareness of the necessity and experience – not yet much more traffic.
We thank all respondents for their contributions!

- 69% indicated their willingness to collaborate to further follow up questions
- 95% indicated their willingness to respond again, next year
This survey could not have been done without the help of RIPE NCC, APNIC, ARIN, AfriNIC and LACNIC.

Thanks to the European Commission who has made this possible by granting GNKS Consult and TNO a study contract on IPv6 Deployment, in line with the EU IPv6 Action Plan.

Thanks to all RIPE members that helped improve the survey instrument, before it was launched, in 2009.

Thanks to RIPE NCC and APNIC staff for support and help, and all RIRs for sending out the survey to their mailing lists.

Special thanks to KC Claffy (CAIDA), Karine Perset (OECD), Leslie Daigle (ISOC), Paul Rendek and Nick Hyrka (RIPE NCC), Miwa Fujii and Paul Wilson (APNIC) for their feedback, advice and support.
Questions regarding the survey and this summary presentation:

Maarten Botterman

maarten@gnksconsult.com

http://www.ipv6monitoring.eu/
The European IPv6 Web Site

http://ec.europa.eu/information_society/policy/ipv6

Questions regarding the Action Plan to the European Commission:
Jacques.babot@ec.europa.eu