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IPv6 RIPEness More Stars

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IPv6 RIPEness Basics

- What *IPv6-ness* can we easily see in our LIRs?
- Award "stars" to LIRs for:
 - Having IPv6 space allocation
 - -Visible in routing (RIS)
 - -route6 Object in RR (RIPE DB)
 - Reverse DNS (RIPE DB)



 All four stars LIRs are listed on the 4* page (+ t-shirt!) <u>http://ipv6ripeness.ripe.net</u>/



5th Star - Actual IPv6 Usage at the Edge

- Is IPv6 address space in actual use?
 - Not lab environments
- Need metric that is hard to cheat on

- Different for different types of networks
 - Categories I looked at:
 - Access providers (eyeballs)
 - Content providers (web)



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Access Networks



Access Networks - APNIC Google Ads

- Cooperation with APNIC R&D on access network data from the "Google Flash Ad Experiment"
- Method: Map IP addresses to LIRs, see how much the IPv6 address space is used compared to the IPv4 address space
- Bias: Wherever APNIC Google Flash Ads are shown (Youtube, ...)



Access Providers - APNIC Google Ads

- Monthly aggregate (2012-08)
 - -2935 LIRs seen (out of ~8.5k total LIRs)
 - -351 (12%) LIRs with any IPv6 eyeballs detected
 - -308 (10%) LIRs with >1% IPv6 eyeballs detected
- Half-year aggregate (2012-03 2012-08)
 - -3975 LIRs seen
 - -635 (16%) LIRs with any IPv6 eyeballs detected
 - -505 (13%) LIRs with >1% IPv6 eyeballs detected
- <u>5th star: be >1% in either monthly or half-yearly</u>



"IPv6 Access Landscape" (2012-08)

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Content Networks



Content Providers - Alexa 1M

- Method: Resolve Alexa 1M hostnames to IP addresses and map these to LIRs. Compare IPv6 vs IPv4 address space.
- Bias: Alexa methodology, location of resolver (NCC office)



Results (2012-09-06):

- -4702 LIRs seen (out of ~8.5k total LIRs)
- -493 (10%) LIRs seen with any IPv6 content
- 404 (9%) LIRs seen with >1% of domains in Alexa 1M on IPv6
- 372 (8%) LIRs seen with >1% of weighted domains (weighted = 1/<rank>)

<u>5th star: be >1% of weighted domains</u>



Content Providers - Weighting

- Example: 2 sites at Alexa ranks 10 and 1000
- Rank 10 is IPv6 enabled , 1000 not
 - -Not weighted = (1 / 2) = 50%

-Weighted % = (1/10) / (1/10 + 1/1000) = 99%

- Rank 1000 is IPv6 enabled, 10 not
 - -Not weighted = (1 / 2) = 50%

-Weighted % = (1/1000) / (1/10 + 1/1000) = 0.99%

 1/<rank> is a reasonable fit for Alexa rank vs. website reach% data



"IPv6 Content Landscape" (2012-09-06)

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Emile Aben, 2012-09

Grand Total - Combined Stats

- 6168 LIRs seen in measurements
- 877 (14%) with any sign of IPv6 at the edge (either access or content)
- 736 (12%) with > 1% of IPv6 at the edge (either access or content)

• <u>12% of measured LIRs, 9% of total LIRs</u>



Rough Edges

- Multi-LIR / across-RIR organisations
- "Low volume" LIRs
- Large hosting, depending on their customers to turn on IPv6

- Is 1% the right limit?
 - -Raise this over time, ie. 2% next year?

https://labs.ripe.net/Members/emileaben/ipv6-ripeness-more-stars



Questions?



