Scooting Along to IPv6 Anycast

Marcel Flores - marcel.flores@verizondigitalmedia.com
Anant Shah - anant.shah@verizondigitalmedia.com
Dealing With Legacy Configurations

- Some (large) legacy users have v6 explicitly disabled on the CDN
  - Rooted in concerns that IPv6 was less reliable.
- We want IPv6 on.

What will happen if we turn on v6?
What do we expect?

- Differences in announcements:
  - Set of peers for v4 vs v6.
  - Provider behaviors.

- Variations in tuning:
  - Performance driven tuning applied unevenly.

- Are clients:
  - Going to use similar paths?
  - Going to connect to the same site?
External Probes

Probes → DNS + NSID

Traceroute + Last hop Match + some BGP data
External Probes - Global Anycast

- 80% of dual stack Atlas probes map to the same anycast site.
- 70% of movers saw a decrease in performance
  - About 20% of those were significant (>20ms)
External Probes - Regional Anycast

- Here, the error is bounded approximately by continent.
- Approximately 82% map to the same location.
- For the remaining 18%, about 58% of movers saw a decrease in performance.
Organic Traffic

- 55% of <pop, asn> pairs perform better with v6
- Tighter bounds overall
Organic Traffic

- Some large v4 contributors appear nearly-single stack.
- Larger v6 providers take a significant portion of the v6 share.
What about the way back?

- Probing outward (from one pop to 10k hosts in an AS)
  - The network appears different
  - Overall performance appears similar
Moving Forward

● What is going to happen if we turn v6 on?
  ○ Different views all look a little different?

● We have something existing to compare!
  ○ How do we leverage known v4 behaviors?

● How do we ensure measurements accurately reflect a future v6 user base?
  ○ New customers, new providers.