Will an ESNI RRTypetype Diverge From the A/AAAA Results?

Let’s find out....
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Except we can’t.
Will an ESNI RRType Diverge From the A/AAAA Results?

Do A and AAAA RRTypes Diverge From Each Other?

Let’s find out....
Gather a Ton of Data....

Database of ~6M Hostnames

Database of ~4k DNS Resolvers

235M A/AAAA pairs

(From one week of observation)
...And Throw Most of It Away

We ignore:

• Hostnames which don’t resolve to an identifiable CDN
• Hostnames which always resolve to the same CDN
• Resolutions which didn’t return both an A and a AAAA result

Leaves us with 224k pairs of resolutions covering 2,559 hostnames
Depends How You Slice It

• 22.9% of all resolutions observed divergence between A and AAAA records
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- 22.9% of all resolutions observed divergence between A and AAAA records
- Varies by hostname; ~40% of hostnames never diverge
- Varies by resolver
  - Almost 30% of resolvers never diverge
  - Only a few resolvers diverge consistently
Different Perspectives

What Clients See

- Both A and AAAA failed
- Either A or AAAA failed
- No CDN identified
- Only one CDN identified
- A/AAAA diverged
- A/AAAA consistent

What Multi-CDN Site Operators See