Concentration of Authoritative Services

Christian Huitema, Alain Durand
November, 2022
IDS
Authoritative DNS services

• Many domain owners don’t run their own servers
  • Maybe because running server is hard,
  • Maybe because small servers are easy targets for DDOS attacks
  • Who knows...

• Authoritative services
  • Publish DNS zones on behalf of the domain owner
  • May publish DNS records for large number of domains

• Our topic, concentration of services
ITHI M9: Measuring authoritative DNS

• Start with list of names
• For each name, find zone and NS record
• Identify server behind record
  • Group based on FQDN of server
  • Group servers based on common domain prefix
  • Manual grouping of name patterns, e.g. AWS servers
• Draw statistics
  • Market share of specific service
• Question: which list of names?
  • Different list of names generate different answer.
Majestic Million and COM zone

• Start with the “Majestic Million” list
  • https://majestic.com/reports/majestic-million

• Slicing the top 1 Million servers
  • Top 100
  • 101 to 1,000
  • 1,001 to 10,000
  • 10,001 to 100,000
  • 100,001 to 1M

• Also measuring the entire COM zone, for reference.
Different Datasets Produce Different Results

- GoDaddy serves largest share of the COM Zone
  - And some of the top 1M as well
- Cloudflare and AWS serve largest shares of “middle size” servers
- Cumulative share of big servers never exceeds 50%

M9: Concentration of Authoritative Services 2022/10
Concentration of Authoritative DNS Services: Not Increasing

- Tracking concentration with “50%” metric
  - Number of services required for 50% of domain names in category
- Very little evolution between January and October 2022
- Metric does not indicate growing concentration