

Comparing DNS Resolvers in the Wild, Ager et al.

Chris Moran

Motivation

- How do systems like OpenDNS and GoogleDNS comparing the local DNS services they are trying to replace?
 - Latency
 - Content based on CDNs

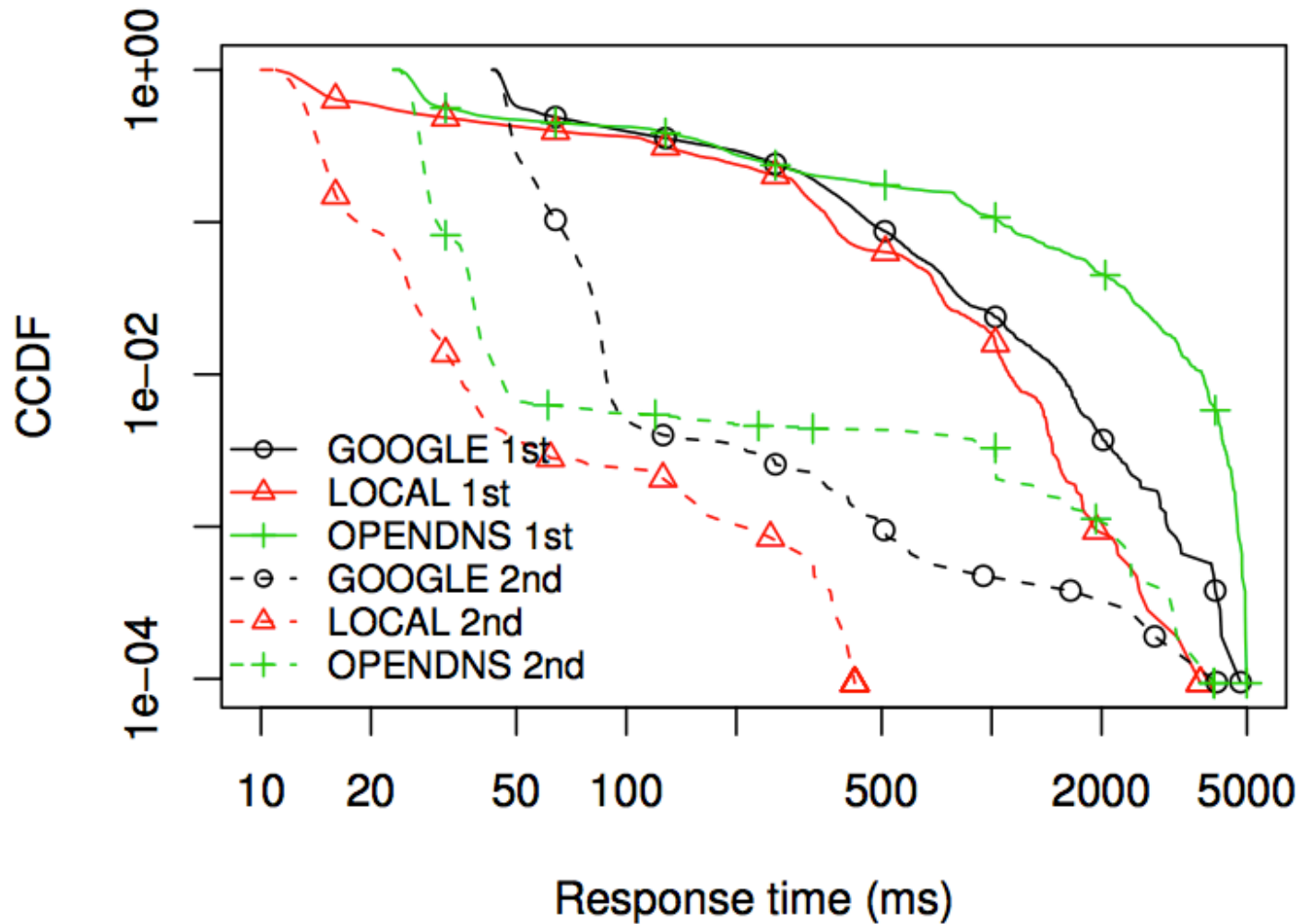
Overview of DNS

- Introduced in 1983
- Hierarchical structure of servers responsible for translating URL to IP
- Lots and Lots of caching to work quickly
- CDN servers use IP of requesting DNS server to redirect clients to different servers in the CDN network
 - Assume DNS resolver is co-located
 - Short TTL values for short reactions to load shifts

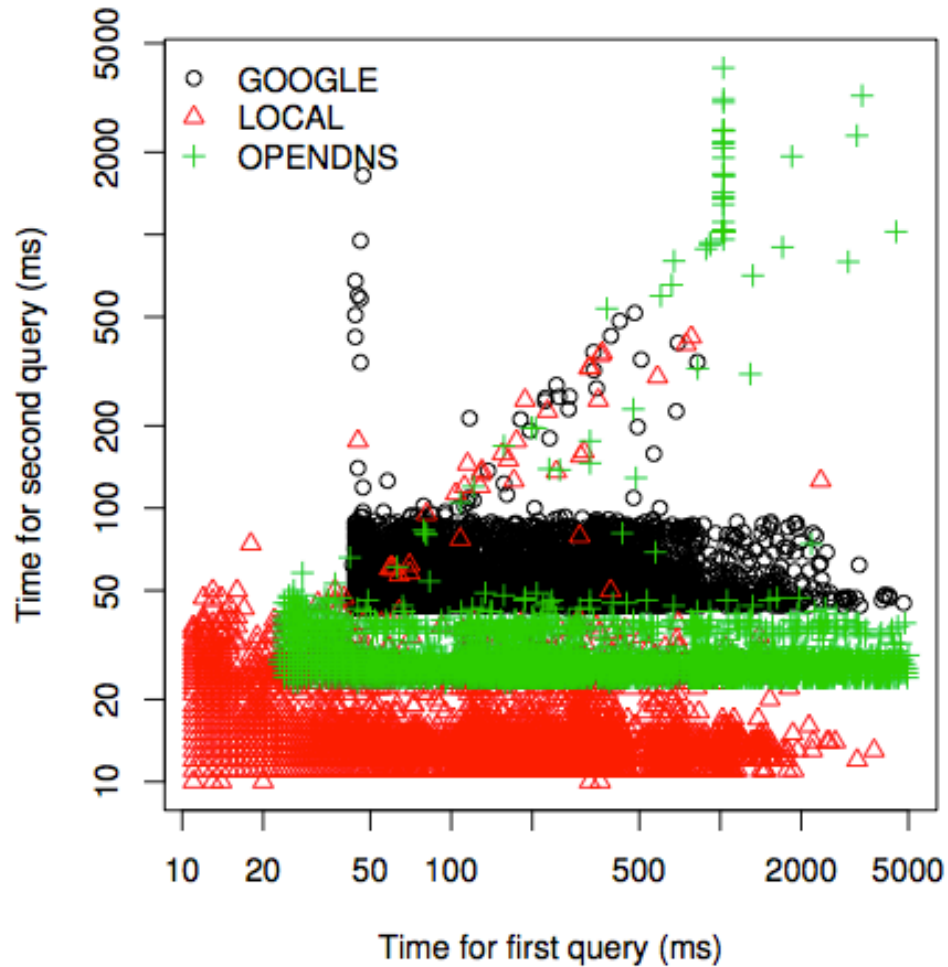
Measurements

- 60 vantage points in 28 countries, 5 continents
- Query 10,000 hosts at each location
 - Top 5,000 Alexa ranked sites
 - Bottom 2,000 ranked
 - ~3,500 sites with embedded content

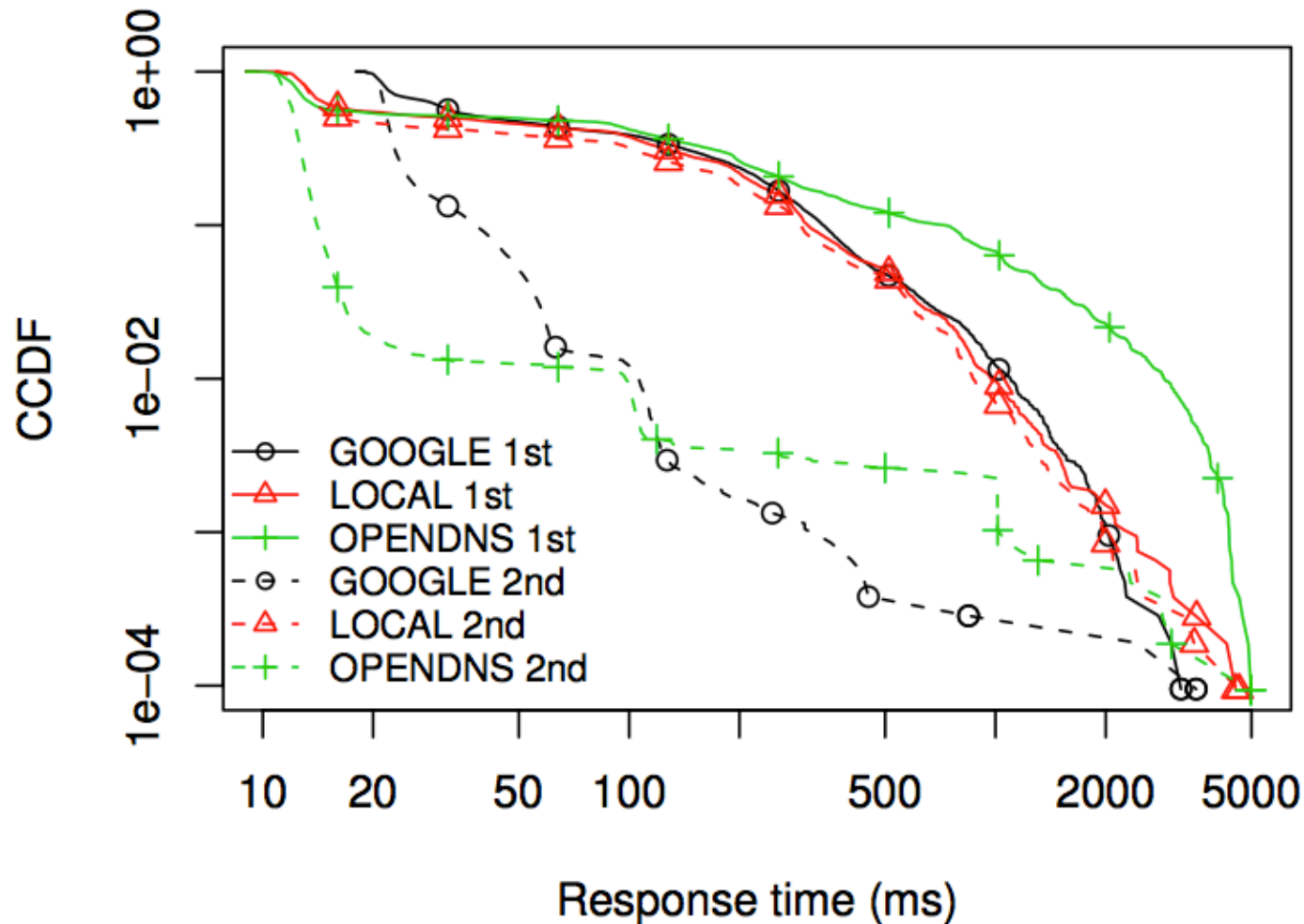
“Good” ISP responsiveness



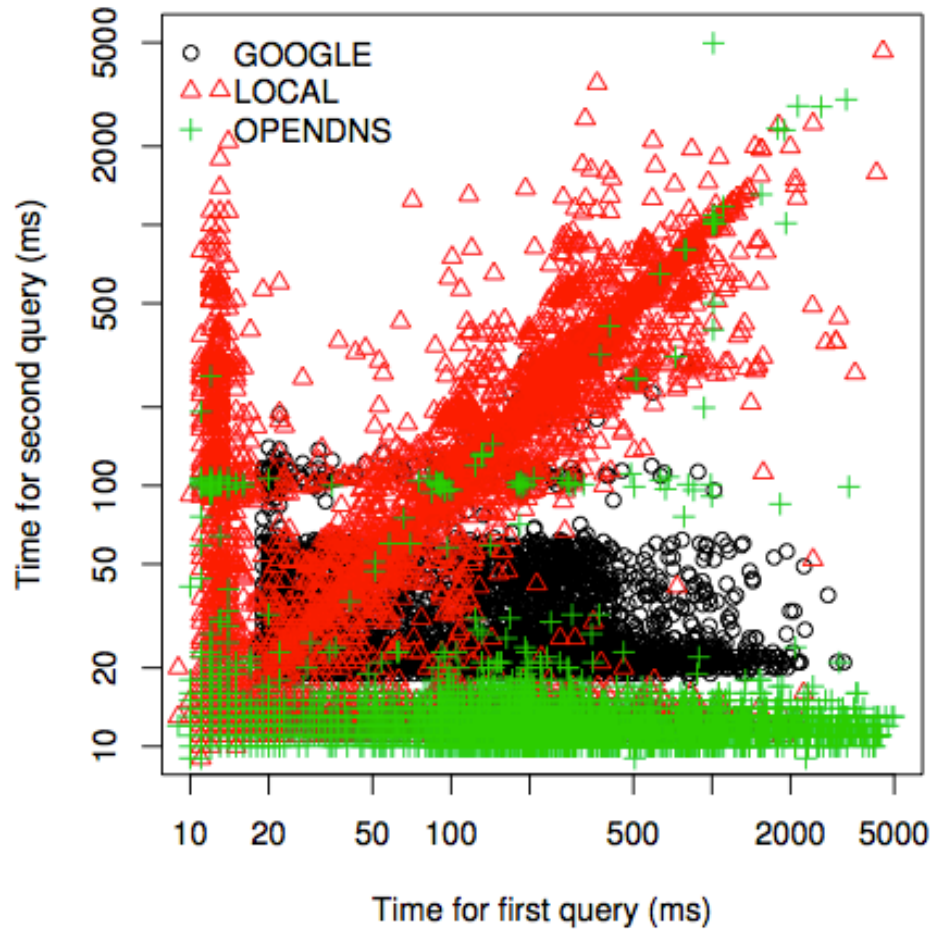
“Good” ISP caching



“Bad” ISP responsiveness



“Bad” ISP caching



CDNs and DNS

- Only local resolvers direct end-users to locally available content
- Using a non-local DNS service undermines load balancing and short latencies that CDNs try to achieve by placing nodes near clients
- Google and OpenDNS direct end-users to content in different AS or subnets
- Google is working against itself