On the Effectiveness of DNS-based Server Selection

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Problems Examined

• Zero or small TTLs
  – cause more DNS traffic
  – cause higher latency

• Assume that client is close to resolver
  – IP is not that of the client
  – client and resolver need not be close
  – may choose wrong server
Small TTLs

- Caching decreases response time
  - fully cached: 2.3ms
  - nameserver cached: 60ms
  - nothing cached: 200ms
Client-Nameserver Proximity

- DNS server only knows the IP of the host contacting it
  - this host is not necessarily the client
Proximity Results

Cumulative distribution frequency (CDF) vs. cluster size in hops

Cumulative distribution frequency (CDF) vs. cluster size in hops for probe site 1 (NY) and probe site 2 (MI)

Cumulative distribution frequency (CDF) vs. path length ratio (common/disjoint) for probe site 1 (NY) and probe site 2 (MI)
Conclusion

• DNS-based server selection is not without its problems

• Possibly add to DNS protocol so that server can always know IP of client, not just requester