# DNS Resolver Performance

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## 1 Performance measurement

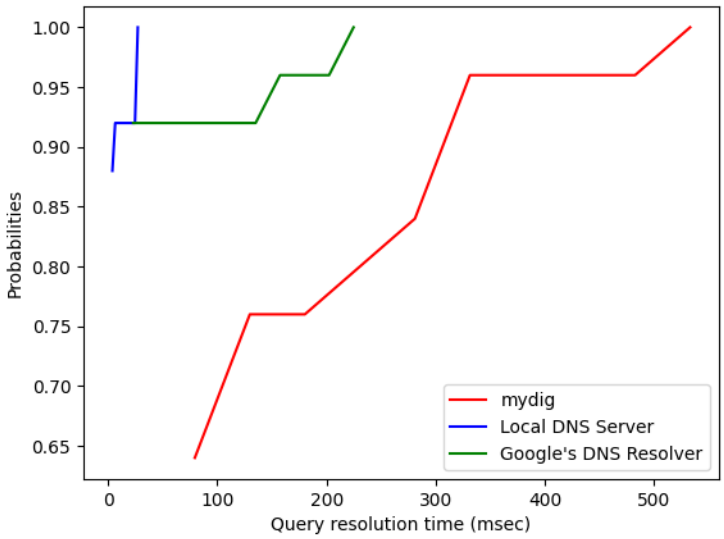


Figure 1: Cumulative distribution graph for the response times by a) DNS resolver b) Local DNS server and c) Google's DNS server

The custom DNS resolver takes up a lot of time to respond to the query as compared to the Google's resolver and the local resolver.

This is because, for the custom DNS resolver, there is no caching mechanism and thus, everytime the response comes from the authoritative name server rather than the cache. However, this is not true for the local and the google's resolver. Their caching mechanism allows them to store the dns records within their cache and then return them when queried, instead of following the path all the way through the root server till the final authoritative nameserver.

| Sites | Mydig | Local DNS | Google's DNS |
|---|---|---|---|
| google.com | 45.6 | 2.8 | 1.4 |
| youtube.com | 45.2 | 2.8 | 1.9 |
| bing.com | 32.0 | 2.0 | 5.4 |
| amazon.in | 39.1 | 1.6 | 1.7 |
| ebay.com | 32.1 | 1.7 | 1.0 |
| sohu.com | 282.7 | 27.1 | 139.0 |
| facebook.com | 43.8 | 1.2 | 5.0 |
| twitch.tv | 33.2 | 1.6 | 4.3 |
| microsoftonline.com | 113.5 | 1.8 | 1.5 |
| yahoo.co.jp | 533.2 | 1.2 | 1.1 |
| amazon.com | 38.3 | 1.8 | 0.8 |
| yahoo.com | 33.7 | 2.1 | 0.4 |
| wikipedia.org | 228.5 | 1.6 | 1.7 |
| weibo.com | 286.7 | 26.0 | 224.8 |
| linkedin.com | 31.5 | 1.7 | 3.5 |
| zoom.us | 28.9 | 2.3 | 2.6 |
| sharepoint.com | 41.2 | 2.1 | 1.1 |
| live.com | 114.2 | 2.3 | 0.9 |
| netflix.com | 38.2 | 1.7 | 2.9 |
| reddit.com | 31.8 | 1.6 | 1.0 |
| microsoft.com | 33.7 | 2.3 | 0.5 |
| instagram.com | 40.5 | 1.7 | 1.5 |
| office.com | 113.9 | 1.7 | 1.2 |
| google.com.hk | 287.5 | 4.9 | 1.6 |
| panda.tv | 255.0 | 2.0 | 1.0 |

Figure 2: Response times for different websites with different resolvers

Another possible reason for the large delay is that most of the time the query returns URLs instead of IP addresses during the redirection phase which adds to an overhead of resolving the IP addresses for the URL of these intermediate nodes