

Preliminary Results of Measuring TCP Pressure on DNS Authoritative Servers

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Measurements: what

- A single US\$500 Intel-based box running four different popular FOSS authoritative servers on Debian 13
- Three setups
 - Out of the box
 - Additional configuration tuning specified by the authoritative server vendor
 - Kernel tuning suggested by LLMs
- Keep sending more queries to the server until it drops more than 1% of the replies
- Test both UDP-only and TCP-only to get the ratio of how much TCP-only pressure the setup could take

Measurements: how

- kxpdgun running on a separate box for 10 seconds
- Both boxes have 2.5G Ethernet ports; connect on an unmanaged 2.5G switch
- For UDP, keep increasing the QPS by 5000; for TCP, increase by 1000

Preliminary results

- The TCP-to-UDP ratio was about 5% to 20% in most tests
- Adding server config improved results a bit for some servers, not others
- Adding kernel tuning made essentially no difference

Notes

- Running on an AMD-based system that also cost US\$500 got much higher performance but about the same ratios where measurements could be made
- CPU load was an unreliable measurement
 - You can still answer queries at 100% load, and you can be dropping queries at lower load
- More to be done in the future before publishing full results and the repo