Collaborative Discussion

Contents

Response to Hendrik van Rooyen

Hi Hendrik,

I found the reference to Steenbergen (2009) and three latency measurement averages per network hop quite interesting. Looking further into this, I read that Jobst (2012) considers one (of several) traceroute anomalies. In particular, traceroute incorrectly reports round-trip times due to either asymmetric paths or Multiprotocol Label Switching (MPLS) that encapsulates packets within their header. They conclude that such an anomaly may lead to incorrect assumptions about congestion for a given hop or link.

Following from the conversation between Smirnov and Swanlow (2021) relating to load balancers (Jobst (2012) adds "per-flow", "per-packet", and "per-destination" load balancers), and that of Marchetta et al. (2016) who think traceroute's blurring of traversed routers may confuse one's understanding of a packet's path, traceroute does not come across as totally reliable. Is there any better tool that you may have come across that provides similar information and yet is more reliable than traceroute?

References

Jobst, M.E. (2012). Traceroute anomalies. Network Architectures and Services. DOI: 10.2313/NET-2012-08-1_02.

Marchetta, P., Montieri, A., Persico, V., Pescapé, A., Cunha, Í. & Katz-Bassett, E. (2016). How and how much traceroute confuses our understanding of network paths. 2016 IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN):1-7.

Smirnov, A. & Swanlow, S. (2021). Collaborative Discussion 1. Available from https://www.my-course.co.uk/mod/hsuforum/discuss.php?d=290195 [Accessed 29 Dec. 2021]

Steenbergen, R.A. (2009) A practical guide to (correctly) troubleshooting with traceroute. NANOG.

Reply from Hendrik Van Rooyen

Peer Response

Hi Michael,

Thank you for your response.

Yes, as pointed out several anomalies may appear by utilising the classic traceroute program Jobst (2012). I will mostly focus on the results based on the observations on three topology anomalies (Loops, Diamonds and Cycles) whereby Augustin et al. (2006) did side-by-side tests with classic traceroute and Paris traceroute. Paris traceroute was able to remove up to 56% of Diamond, 87% of Loop and 68% of Cycle anomalies as seen in their measurement artefact. With this result, we can thereby conclude that Paris traceroute is a more precise tool for uncovering all load balanced paths than classic traceroute.

References

Jobst M.E. (2012) Traceroute anomalies. Network Architectures and Services 9. DOI: https://doi.org/10.2313/NET-2012-08-1_02

Augustin et al. (2006) 'Avoiding Traceroute Anomalies with Paris Traceroute', IMC '06: Proceedings of the 6th ACM SIGCOMM conference on Internet measurement. Rio de Janeriro, 25-27 October. New York: Association for Computing Machinery. 153-158.