AppNeta
by Broadcom Software

WHITE PAPER

HOW TO HOLD ISPS ACCOUNTABLE FOR LAST-MILE PERFORMANCE

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INTRODUCTION

With employees at home, the requirements on IT to troubleshoot residential and last-mile ISP network issues is growing, even as inherent visibility into these networks remains lacking. At AppNeta by Broadcom Software, our active monitoring provides insight into employees' local networks and last-mile ISP performance to help IT quickly understand the root cause of performance issues. So if that root cause is with an ISP, AppNeta will help you prove it.

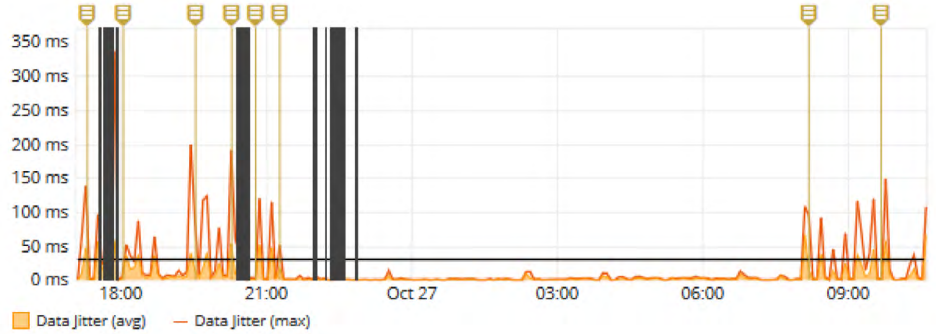
VISIBILITY INTO LAST-MILE NETWORKS

Like many of us working-from-home (WFH) this year, an enterprise customer of ours quickly saw that employees were experiencing periodic freezing of voice and video when using conferencing tools outside of the office. For nearly 2 months users dealt with the issue because IT could not determine the root cause, and while the users reached out to their ISP, they got no relief. Simply put, the ISP assumed the problem was in the local network, and without data to contest the ISP's claim, the user couldn't prove who was really at fault for degradation.

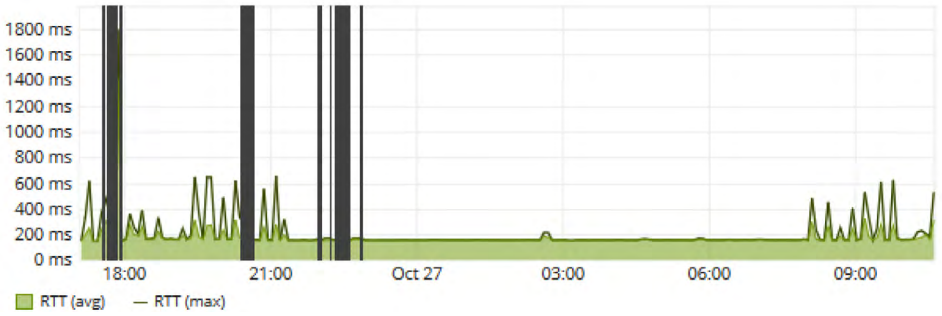
VISIBILITY INTO LAST-MILE NETWORKS *(CONTINUED)*

After learning about the capabilities AppNeta could offer for WFH employees, a Workstation Monitoring Point was installed and left running for a day on this user's laptop. The root cause of the issue was identified in 30 minutes. While the customer wanted to collect more data to be sure, the cause of the freezing was almost immediately seen to be spikes of RTT and simultaneous jitter of several hundred milliseconds.

Data Jitter



Round-Trip Data



The graphs above show large spikes in outbound data jitter and RTT that disappear around 22:00 and reappear at 08:00.

Note: the black vertical lines indicate when monitoring was paused to test various theories like wireless vs. wired connection, and congestion in the employee's home.

DUE DILIGENCE

Wanting to be thorough, AppNeta's customer provided the user with access to embedded charts from AppNeta to show the problem in real-time with live charts of both jitter and RTT. When the next freeze occurred the user was able to immediately correlate additional spikes to AppNeta's metrics as expected.

IDENTIFYING ROOT CAUSE

By adding Alert Thresholds the team was able to automatically trigger a diagnostic test the next time the issue occurred. Sure enough, it didn't take long for the problem to return. After reviewing the diagnostic results, the network team was able to pinpoint the issue at the hop directly after the LAN egress, proving that for hops within the local network all metrics were satisfactory and performance was good.

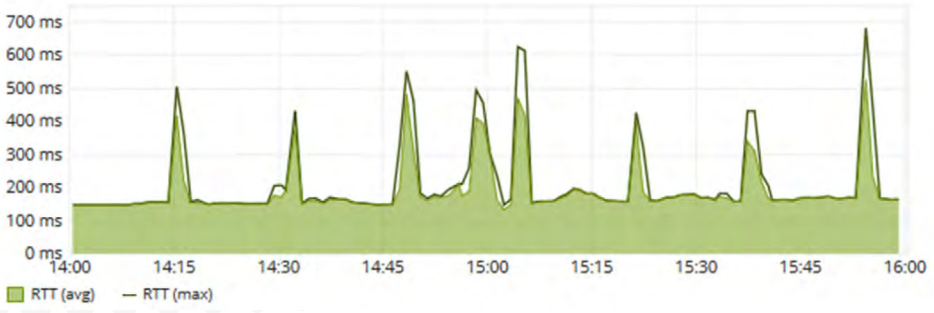
Route Diagram

The route diagram above shows the first hop of the ISP that was the new focus of testing because over time that first hop outside of the LAN was consistent. A new path was configured to that device for further testing.

ISOLATING THE ISP DEVICE

New test results arrived in real-time showing that the excessive RTT shown at the target of the original testing was already present by hop 2 (the new target). This limited the problem down to either very high utilization in the local internet connection or an intermittent problem with the device at hop 2.

Round-Trip Time



The RTT chart for a path limited to the local network and first ISP device still exhibiting intermittent RTT spikes.

ISOLATING THE ISP DEVICE *(CONTINUED)*

The network team removed all wireless devices from the network and hard-wired the end-users machine to eliminate congestion and wireless signal as culprits. With all of that done, they then approached the ISP and were able to prove that the ISP was at fault.

AppNeta provides network operations teams with the visibility and data that they need to be able to identify root cause and approach 3rd party service providers with enough information to prove where a problem is, and eliminate finger pointing back at the user or local networks.

To learn more about how AppNeta is helping modern enterprise IT teams tackle their most pressing work-from-anywhere challenges, schedule a demo.

BROADCOM SOFTWARE

About Us

Broadcom Software is one of the world's leading enterprise software companies, modernizing, optimizing, and protecting the world's most complex hybrid environments. With its engineering-centered culture, Broadcom Software is building a comprehensive portfolio of industry-leading infrastructure and security software, including AIOps, Cybersecurity, Value Stream Management, DevOps, Mainframe, and Payment Security. Our software portfolio enables innovation, agility, and security for the largest global companies in the world.

For more information, visit our website at: software.broadcom.com