GUIDE TO VISIBILITY ANYWHERE

BROADCOM®
SOFTWARE

This is Network Visibility Anywhere.

At Broadcom Software, we believe that in today's digital world, a "connection" is a actually a network connection that should be experience-proven. Which means if you prove the user experience is reliable; then you can more accurately assure resilient network delivery.

We want to help our customers move beyond device-specific visibility and into experience-driven network operations that uses end-user experience metrics to determine if the network is in good state or not – for any user, on any device, on any network.

The Need for Network Visibility Anywhere

The internet is the new network now. The application experience does not exist within the four walls of the data center anymore. Research reveals that 87% of application traffic traverses the internet and 83% of application workloads are in the cloud.

Unfortunately, 67% of IT staff surveyed cite internet & cloud network paths as monitoring blind spots.

Why? Because legacy toolsets are centered on monitoring infrastructure and traffic for networks that IT owns. Furthermore, the pandemic has only increased the need for true end-to-end visibility as organizations now have employees working from anywhere.

85%
report a permanent increase in remote workers due to the pandemic

70%
**report an increase in cloud adoption during the pandemic**

83%
report that cloud adoption has increased bandwidth consumption

https://www.forbes.com/sites/louiscolumbus/2018/01/07/83-of-enterprise-workloads-will-be-in-the-cloud-by-2020/?sh=572bb6216261
https://www.broadcom.com/company/industry-analyst-report/ema-radar-report-network-performance-management
https://www.intelligenttechchannels.com/2019/07/29/spire-solutions-signs-with-gigamon-to-accelerate-incident-detection-and-response-times/a

Defining End-to-End:
The Network Edge Mas Moved

The success of hybrid work dictates that we are unlikely to return 100% to the offices of the past. This adoption suggests that the extents of the enterprise network have shifted outwards to a new user-centric edge. Now, users working remotely must be able to access business-critical apps from anywhere. This translates to IT being responsible for the end-to-end connectivity without owning or having visibility into most of the delivery path.
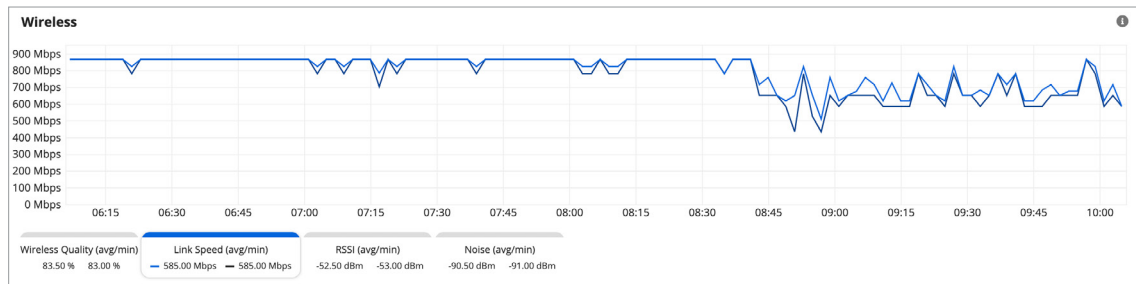
In order to solve this problem, IT needs visibility into the primary networks that make up the app delivery path. These are the end-user environment, last-mile ISP connectivity, any transit or peering providers, and the app hosting infrastructure (either cloud-based or internally hosted in the enterprise data center). For internal apps some of this is visible, but for SaaS and cloud apps the entire chain can be a black box. By getting visibility into the entire chain, and being able to isolate each distinct network, you can quickly identify what is within your ability to fix and what requires engaging with a 3rd party.

| USER ENVIRONMENT | LAST-MILE ISP | TRANSIT - BACKBONE | APP INFRASTRUCTURE |
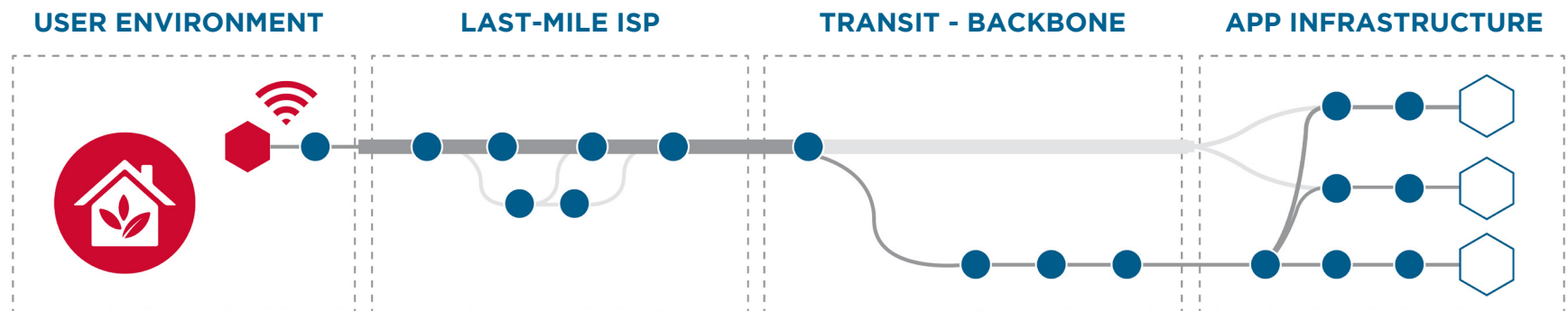
Isolating the User Environment

The end-user environment has been, by far, the most troublesome network during the pandemic. With little to no visibility, IT can waste hours on troubleshooting issues specific to a single user.

The goal of Network Visibility Anywhere is to increase the coverage of the new extents of the enterprise network and reduce the mean time to resolution of performance issues. To do that, there are a number of new metrics that should be available when troubleshooting. To get these metrics, a combination of active and passive monitoring methods can help you quickly identify common issues.

Wireless

Wireless Quality (avg/min)	Link Speed (avg/min)	RSSI (avg/min)	Noise (avg/min)
83.50 % 83.00 %	— 585.00 Mbps — 585.00 Mbps	-52.50 dBm -53.00 dBm	-90.50 dBm -91.00 dBm

KEY MEASUREMENTS

CONNECTIVITY STATUS

Understanding when a user is connected via wired, WiFi, and VPN can make the difference. Often, users will connect to wired if available for discussions with IT, but that doesn't match their normal behavior.

WIRELESS METRICS

The source of many at-home issues, WiFi statistics can be very useful when determining if users are moving about their house in and out of hot spots during the day. Particularly helpful are these metrics: BSSID, Signal Strength, RSSI, and Noise.

LAST-MILE ISP

From local outages to asymmetric capacity, knowing the ISP for users and being able to sort, filter, or report on performance over time can be extremely effective at isolating intermittent issues that plague WFH environments.

Visibility Into the Mid-Path

Outside of the end-user environment another core network that has become essential for hybrid work is the public internet. Even when users connect through VPN, the last-mile, residential ISP that connects them can be the source of endless headaches.

Ideally, enterprises should be dictating policy around quality and speeds for remote workers, but even the best laid plans can still cause issues. The reality is that IT has become responsible for troubleshooting connectivity issues regardless of where users are located.

To solve this, active monitoring across 3rd-party networks can enable IT to understand the path user traffic takes in order to identify common issues like peering changes, throttling, or excessive route changes. By monitoring the active routes via BGP you can also see when peering relationships are the source of performance issues.
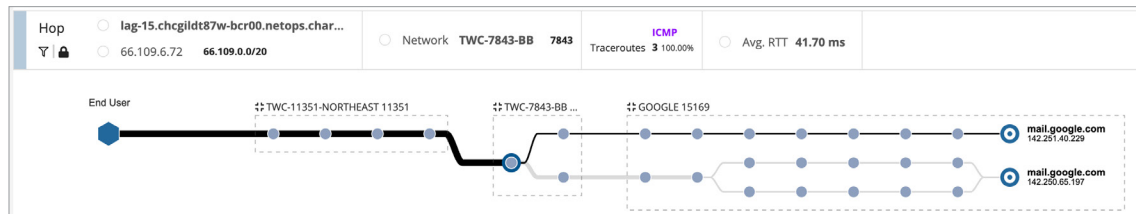
It's hard to find end-to-end tools that show path selection and routing selection. Connectivity tests or pathing tests that show how an application talked to another application are not available.

NETWORK ARCHITECT,
$14 BILLION RETAILER

Visibility Into the Mid-Path (Cont'd)

METRICS MOST NEEDED FOR ASSESSING USER EXPERIENCE AND SERVICE DELIVERY

52%

End-to-end loss, latency, and jitter across internet paths

52%

DNS availability and resolution times

48%

Internet/ISP outage reports

41%

BGP routing changes

Source: EMA

Work-from-Home / Anywhere

→ Yesterday
10,000 employees connected to **5 on-premises networks**

→ Today
10,000 employees connected to **10,000 off-premises networks**

Source: EMA

Understanding App Service Providers

The adoption of SaaS and Cloud apps has made the job of IT even harder when it comes to understanding performance of business-critical functions. With no visibility into the network paths that deliver these apps to users, IT is forced to resort to status pages and support tickets if issues arise. Instead, embracing network visibility anywhere means actively monitoring business-critical applications to understand when users are impacted. While outages are rare, knowing that an outage does or does not affect users can gain IT credibility and build confidence in users.

KEY MEASUREMENTS

INSTANCES & REGIONS

When support tickets come in around poor performing apps being able to see if all users in a region are experiencing the issue is essential. Can you isolate this ticket to a single user, a single region, or a single app? Doing so can save hours of troubleshooting.

OUTAGES

Apps rarely go down anymore. When the big ones do, it makes news. But apps certainly slow down and depending on how many employees need to use them, slowness can lead to productivity issues. Proactively monitoring core apps gives IT a heads up when performance slows.

LOAD BALANCING

The amount of load balancing and dynamic routing that happens within cloud environments makes it very difficult to understand performance. However, monitoring the active route over time for individual users can help you understand when those changes impact your users.

Understanding App Service Providers (cont'd)

61%

OF NETOPS TEAMS BELIEVE THEIR NETWORK MANAGEMENT TOOLS COULD DO A BETTER JOB OF SUPPORTING A PUBLIC CLOUD ENVIRONMENT. SOURCE: EMA

Most popular tools for monitoring user experience and service delivery for cloud apps

54%

Active, synthetic monitoring via on-prem probes

52%

Active, synthetic monitoring via internet-based probes

46%

Flow Monitoring

Source: EMA

Putting It All Together

Across the entire app delivery chain, visibility is key. Without it you'll be left in the dark when it comes to troubleshooting the variety issues introduced by the growth in remote work and cloud apps. While the responsibility lies with IT, you need to be proactive in getting the metrics, alerts and visibility you need to increase the efficiency of your teams.

Whether it's driving success of transformational projects, enhancing end-user experience or delivering performance insight across the users base, IT has a tough challenge ahead. Broadcom Software provides the solutions necessary to isolate performance across every link in your architecture. As your guide to network visibility anywhere, we have the tools needed to provide unique insight into the growing network boundary.

Visibility is our biggest issue – how applications are behaving in the cloud and how the cloud is behaving. We need better monitoring

SENIOR NETWORK ARCHITECT, VERY LARGE GOVERNMENT AGENCY

GET END-TO-END VISIBILITY INTO NETWORK PERFORMANCE FROM THE END-USER PERSPECTIVE.

GET A DEMO TODAY

HTTPS://WWW.APPNETA.COM/DEMO/

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