WHITE PAPER
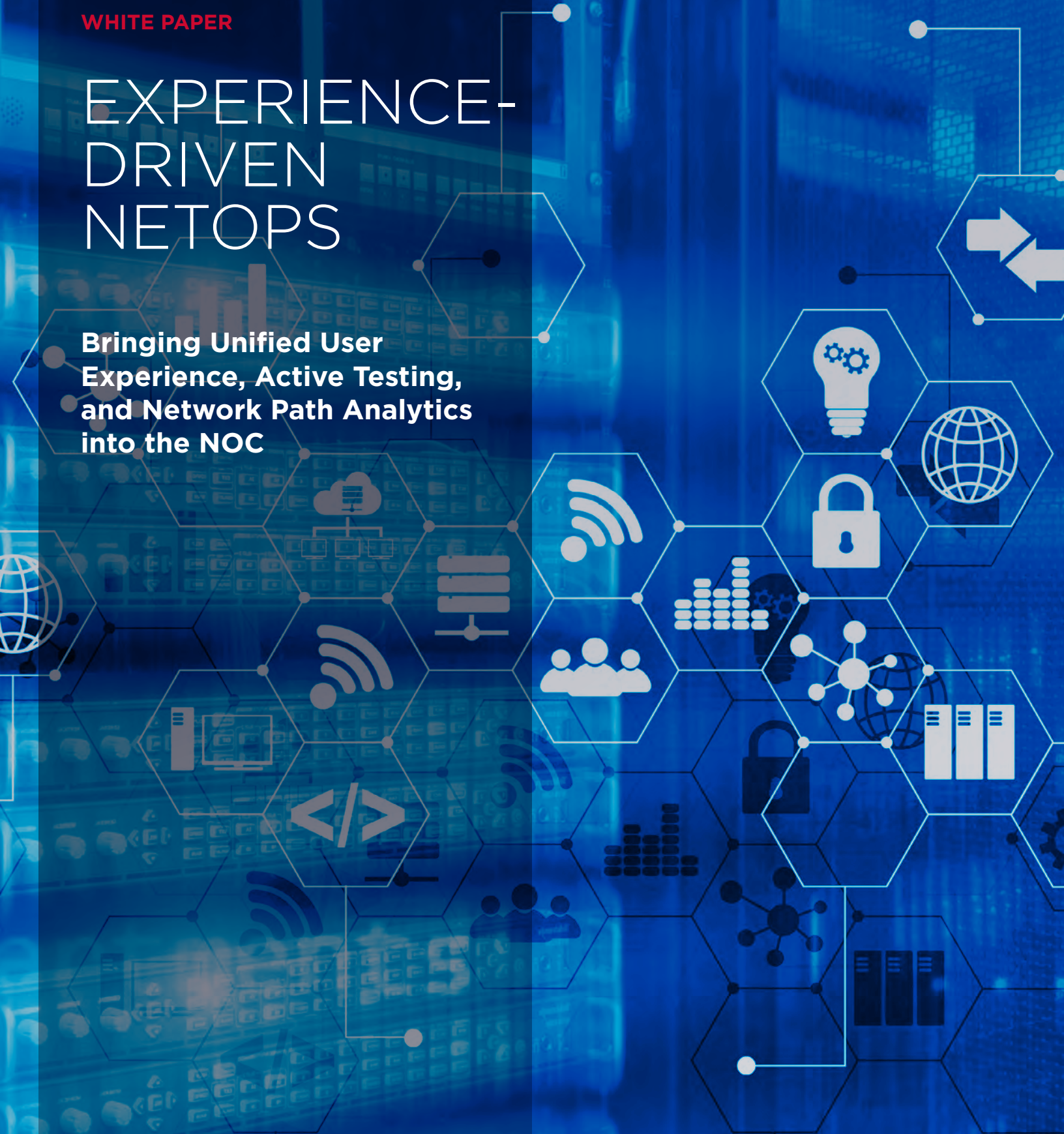
EXPERIENCE-DRIVEN NETOPS

Bringing Unified User Experience, Active Testing, and Network Path Analytics into the NOC

WHITE PAPER

EXPERIENCE-DRIVEN NETOPS

Bringing Unified User Experience, Active Testing, and Network Path Analytics into the NOC

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Networks, and the teams that operate them, have gone through dramatic changes. In recent years, these teams have expanded their networks, established support for a new breed of remote workers, and accelerated cloud, SaaS, and SD-WAN adoption. Consequently, the users' digital experience is now much more reliant on the internet than the network teams' own data centers. Now, to troubleshoot quickly and effectively if any degradation in the user experience arises, network operations (NetOps) teams need expanded visibility of performance and application delivery on any network infrastructure, including home wireless, last-mile ISP, transit backbone, and cloud and SaaS environments.

CHALLENGE

Cloud and SaaS adoption continues to grow rapidly, often outpacing budgets. In fact, in 2021, in more than 40% of organizations, spending on IaaS and SaaS exceeded budgets.[1] With all this investment, how do you ensure these services deliver on their full potential? How do you make sure these services heighten—not hinder—your ability to do in-depth, end-to-end monitoring? How do you ensure that your NetOps teams and their monitoring tools work effectively in a cloud- and SaaS-first networked world?

Figure 1: Network delivery has expanded beyond the four walls of the data center to include ISP and cloud networks.
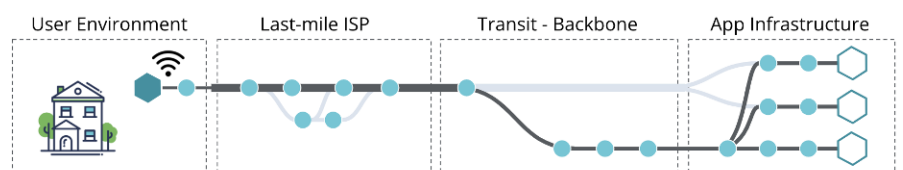
The real question for NetOps teams is how do you begin troubleshooting something you can't see?

NetOps teams are already dealing with complex network architectures within the four walls of their data centers and within each of their remote locations. Technologies like SD-WAN are dynamic, multi-vendor engines that make frequent routing changes based on usage. The complexity of this infrastructure and the continual changes caused by fluctuating business and user demands often lead to a range of challenges, including long triage times, poor capacity planning, and increased NetOps costs.

Further, with "unmanaged" networks like ISP, cloud, and SaaS environments, the challenges are compounded. NetOps teams contend with lengthy troubleshooting efforts, multi-vendor blame-game scenarios, and lack of visibility across large portions of the network delivery path. As a result, NetOps teams can't quickly identify and solve delivery issues, and the end-user experience is degraded.

The real question for NetOps teams is how do you begin troubleshooting something you can't see?

OPPORTUNITY

DX NetOps and AppNeta from Broadcom Software both excel in their respective focus areas, enabling teams to ensure optimized network performance.

67% of network operations teams cite internet and cloud network paths as monitoring blind spots.

DX NetOps offers leading capabilities for managing traditional and software-defined network performance, fault, and flow, and it provides advanced alarm correlation, alarm noise reduction, and root cause analysis. AppNeta features leading end-user experience monitoring capabilities, providing visibility across cloud, ISP, SaaS, and WAN networks. Combined, these solutions enable NetOps teams to gain full visibility into their network connections from an end-user experience perspective, regardless of vendor, technology, location, access, or ownership. This helps teams to ensure reliability and performance for the entirety of the network paths that connect end users and systems to applications and services—within and beyond the four walls of the data center.

By integrating AppNeta's inventory, events, and performance metrics into DX NetOps, teams gain the ability to easily triage not only up/down issues but end-user experience issues across the entire path of network transactions. DX NetOps offers a seamless operational experience, industry best practices, and best-in-class triage and alarm correlation workflows. By leveraging these capabilities, teams can be equipped like never before to ensure resilient connectivity across all network types.

67% of network operations teams cite internet and cloud network paths as monitoring blind spots.[2] By integrating DX NetOps with AppNeta, Broadcom is helping to "operationalize" the internet and cloud provider environments that most network paths traverse. The solutions provide expanded visibility into network performance, fault, and flows—and in the process eliminate traditional blind spots.

Figure 2: Dashboard provides unified visibility into network path change events from a Sydney ISP network out to an AWS environment. Granular triage data embedded in the alarm enables faster troubleshooting times, even for those networks NetOps teams don't own.
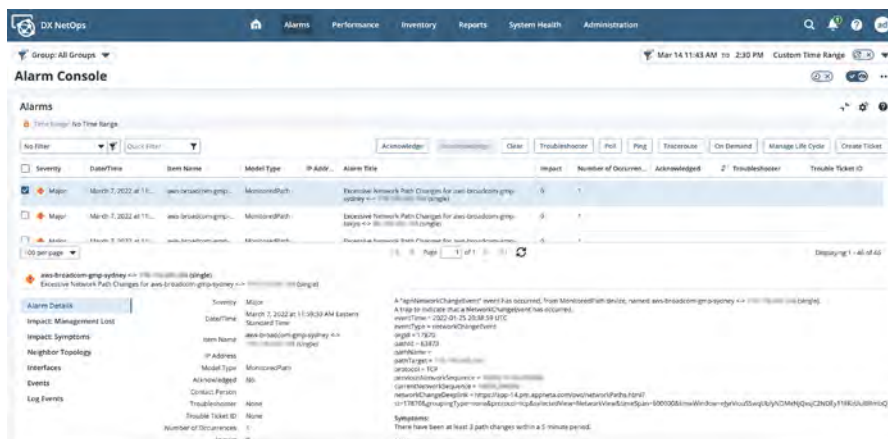
Additionally, AppNeta is the only network performance monitoring solution that delivers visibility into the end-user experience, for any application, from any location, and at any time.

What this means is that even a level 1 NOC operator will have enough insights, intelligent data, and easy triage workflows to identify and isolate end-user experience issues—without having to escalate to a network engineer or architect. Further, they can identify issues that are occurring in networks they do not own, such as ISP and cloud environments.

A real-world example of this would be a large media company about to issue a press release at a specific time and date. Many factors are dependent on issuing this press release at this exact time, including stock market valuations, coordination among geographical time zones, social media promotions, and more. As the press release is issued, one team member is working from home and is tasked with promoting this event on all the company's social media channels to amplify the news as quickly and widely as possible. To do so, they use a SaaS application that is linked to all the company's social media outlets. However, they have trouble accessing the application; the login page doesn't open in their browser.

Is the issue arising in their home wireless network or with the local ISP, or is the application itself down?

The combination of DX NetOps and AppNeta from Broadcom Software would easily help operations troubleshoot this scenario and isolate the problem area. With these solutions, teams can monitor the entire user experience, hop by hop, transaction by transaction. Therefore, they can determine that while this user's home wireless network, local ISP, and backbone transit networks are all in a good state, there are outages within the AWS environment where this application is hosted. The result is faster mean-time-to-resolution (MTTR) and mean-time-to-innocence (MTTI). The evidence can be taken to the SaaS provider to escalate the issue for resolution or NetOps teams can find a workaround to establish the required connectivity.

Figure 3: AppNeta offers network path visualizations that span ISP and SaaS environments. This enables operations to quickly isolate performance degradation in these unmanaged networks.
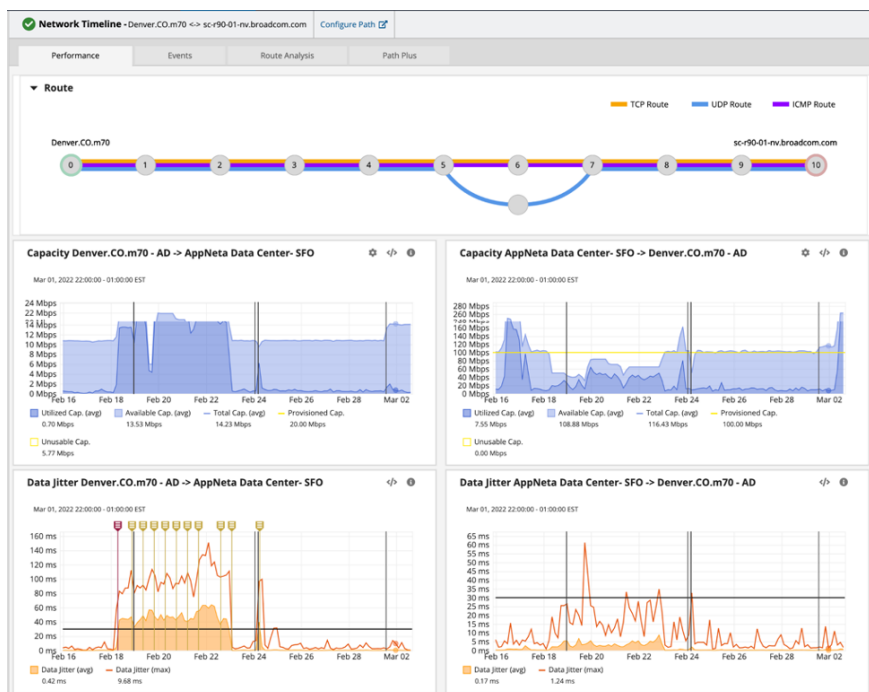
SOLUTION

AppNeta provides an end-user experience perspective on application and network performance. DX NetOps is a monitoring solution with a deep technology focus. Combined, these solutions offer unparalleled visibility for modern enterprises, enabling teams to achieve the following business outcomes:

Ensure successful network transformations. As the needs of your business evolve, you gain the visibility you need to successfully pursue internet-first strategies, SaaS adoption, and cloud migration.

Enhance end-user experience. Keep staff productivity high and reduce friction. Establish proactive monitoring of business-critical apps so you can detect network performance issues before they have an impact on users.

Work more efficiently. Instead of spending hours looking for the cause of network or end-user experience degradations, you can discover issues automatically, isolate them easily, and act on them immediately.

Visualize the remote workforce. Monitor connections from the end-user perspective to get proactive visibility into the performance of any application, for every user, on any network, anywhere in the world.

Figure 4: Example of routing changes detected between multiple locations over time for an Office365 SaaS environment.
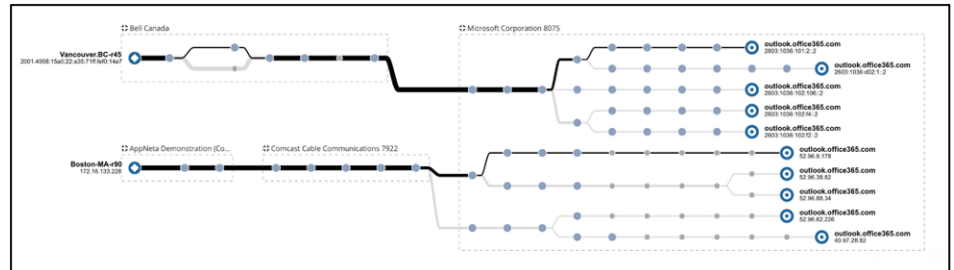
Active and passive monitoring. AppNeta combines passive monitoring, traffic analysis, packet-level data, and active synthetics for the network paths and applications that are critical to your business. The solution delivers unique insights and correlated data sets that enable faster issue resolution and better end-user experiences. The solution offers coverage of the following areas:

• **Network paths**. Increase IT efficiency by dramatically reducing MTTR. Isolate issues in networks outside of your control.

• **Web/URL**. Use synthetic transaction monitoring to identify SaaS and web app issues and take action before they affect users.

• **Flows**. Monitor the actual end-user experience and identify every app in use across your distributed network.

• **Packets**. Determine the root cause of critical issues by gaining timely access to raw packet data from remote locations.

CLEAR NETWORK OPERATIONS CENTER BENEFITS

Unified Operations Triage

• Gain end-to-end views of network delivery and user experience.

• Leverage contextual drill-down to easily focus triage efforts on problematic devices, components, or hot-spots.

• Establish baselines and analyze deviations to do triage.

• Use business hours support to ensure teams are evaluating the right data during peak and off hours.

Intelligent Alarming

• Minimize noise through correlation of related events.

• Expedite operational response by focusing on root cause.

• Correlate problems within the SD-WAN underlay, which can affect delivery across the SD-WAN overlay.

• Gain deep insights from direct device monitoring in order to identify end-user experience issues.

Unified Experience-Driven Workflow

- Employ best-in-class contextual operational workflows that unify network path and device/component monitoring.

- Harness efficient triage processes to decrease MTTR and operations costs.

- Focus on the problems that matter by prioritizing end-user experience issues above up/down and congestion alerts.

- Establish continuous, end-to-end visibility that decreases MTTI and improves interactions with service providers.

USE CASE #1

"I need a unified view of my network infrastructure operations, so I can efficiently and effectively respond to problems, regardless of technology, location, or ownership."
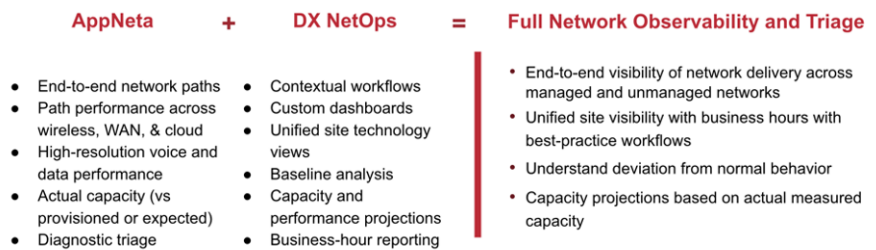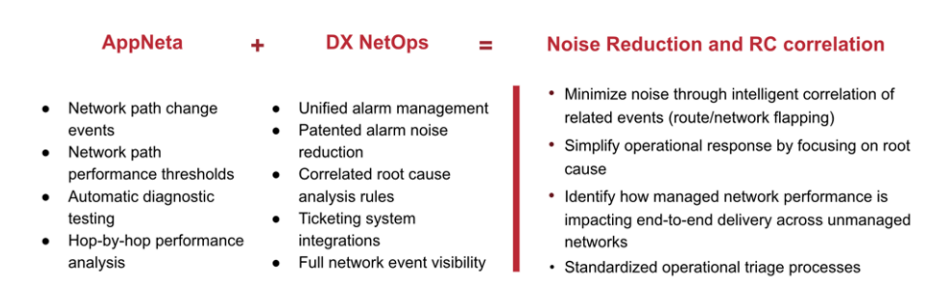

Broadcom Software is adding network experience and unmanaged network equipment into existing best-in-class triage workflows. In addition, we are leveraging big-data intelligence for data analysis. This enables us to deliver capabilities for baseline analysis, deviation from normal, percentiles, and custom projections to all of the metrics integrated from AppNeta.

DX NetOps can render this data as well as the raw data provided by AppNeta within the scope of business hours. This enables proper analysis, particularly in such time-sensitive industries as retail and finance.

USE CASE #2

"I want to minimize noise and do intelligent root cause analysis by correlating managed, unmanaged, and user-experience events and alarms."

With these insights, NetOps teams can prioritize remediation efforts based on business impact rather than simply on alarm duration or severity.

AppNeta + DX NetOps = Noise Reduction and RC correlation

AppNeta
- Network path change events
- Network path performance thresholds
- Automatic diagnostic testing
- Hop-by-hop performance analysis

DX NetOps
- Unified alarm management
- Patented alarm noise reduction
- Correlated root cause analysis rules
- Ticketing system integrations
- Full network event visibility

Noise Reduction and RC correlation
- Minimize noise through intelligent correlation of related events (route/network flapping)
- Simplify operational response by focusing on root cause
- Identify how managed network performance is impacting end-to-end delivery across unmanaged networks
- Standardized operational triage processes

DX NetOps can apply patented event correlation and induction technologies to AppNeta paths and end-user experience alarms. This brings a new level of correlation to existing network and infrastructure alarms, helping operators understand how outages and performance issues are affecting actual end-user experience and application delivery. With these insights, NetOps teams can prioritize remediation efforts based on business impact rather than simply on alarm duration or severity.

CONCLUSION

At Broadcom Software, we believe a connection in today's digital world is actually a network connection that should be experience-proven. If you can prove the user experience is reliable, then you can more effectively ensure resilient network delivery.

This is where Broadcom Software is taking its award-winning network monitoring solutions. We're moving well beyond basic device-specific visibility, such as whether a router is up or down, and enabling monitoring that employs end-user experience metrics to determine if the network is in a good state or not—for any user, on any device, on any network, anywhere.

Sources

1 Gigamon, "Your Network and Their Cloud: Less Visibility. More Vulnerabilities." Mark Leary, February 21, 2022, https://blog.gigamon.com/2022/02/21/your-network-and-their-cloud-less-visibility-more-vulnerabilities/

2 Intelligent Tech Channels, "Spire Solutions signs with Gigamon to accelerate response times," Mark Bowen, July 29, 2019, https://www.intelligenttechchannels.com/2019/07/29/spire-solutions-signswith-gigamon-to-accelerate-incident-detection-and-response-times/

BROADCOM®
SOFTWARE

To learn more about Broadcom's award-winning network monitoring solutions, schedule a demo with our team.

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