



# DX NetOps

Displaces SolarWinds at Broadcom, Delivers Improved Operational Efficiencies and a 6-Times Boost in Monitoring Scalability

## CLIENT PROFILE

Organization: Broadcom

Industry: Information Technology

Employees: 20,000+

"DX NetOps saves us on operating expenses by consolidating all of our tools into one unified and comprehensive network monitoring platform and brings all of our teams together."

—Krishna Kayala, Enterprise Architect,  
Broadcom Global Technology  
Organization (GTO)

"Broadcom's global technology organization (GTO) is responsible for monitoring and maintaining more than 100 sites, 12 data centers, and 400 R&D labs."

## Business

Broadcom is a global infrastructure technology leader built on 50 years of innovation, collaboration, and engineering excellence. With roots based in the rich technical heritage of AT&T/Bell Labs, Lucent, and Hewlett-Packard/Agilent, Broadcom focuses on technologies that connect the world. Through the combination of industry leaders like Broadcom, LSI, Brocade, CA Technologies, and Symantec, the company has the size, scope, and engineering talent to lead the industry into the future.

Broadcom is focused on technological innovation and category-leading semiconductor and infrastructure software solutions. By combining global scale, engineering depth, broad product portfolio diversity, superior execution, and operational focus, the company has established global leadership in numerous product segments. The company delivers category-leading semiconductor and infrastructure software solutions, so its customers can navigate constant change, and build successful, growing businesses.

## Challenges

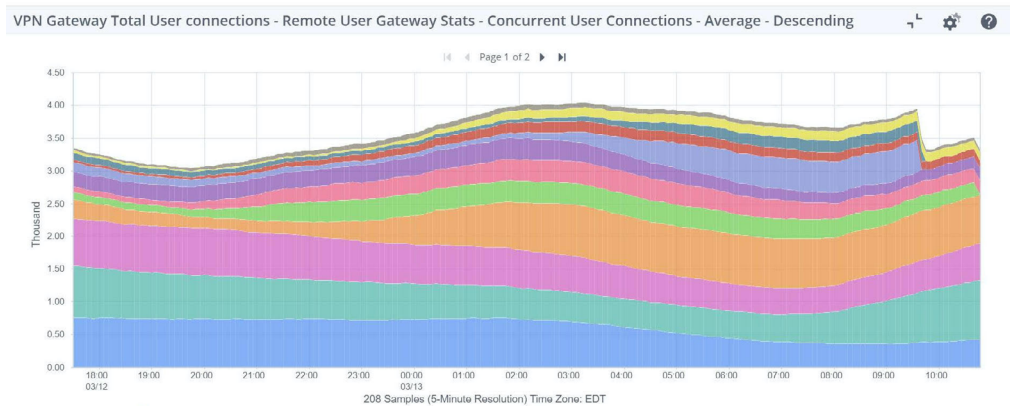
Broadcom's global technology organization (GTO) is responsible for monitoring and maintaining more than 100 sites, 12 data centers, and 400 R&D labs. In addition, they're tasked with supporting approximately 13,000 network devices, including routers, switches, firewalls, access points, and gateways.

In prior years, the IT operations team within the GTO had been using SolarWinds to manage a portion of their large network, approximately 2,000 devices. While running SolarWinds, the team encountered the following operational challenges:

- Cumbersome troubleshooting and identification of the root cause of outages
- Inability to scale monitoring in order to support growing network operations
- Difficulty configuring monitoring and alarms for all the diverse device types, interfaces, and routers deemed critical to their dynamic, globally distributed environment
- Too much time spent triaging incidents across multiple teams, extending mean time to resolution
- Lacked a unified monitoring platform that could automatically manage relationships, topology, and correlation of network events

In replacing SolarWinds in early 2020, the team sought to achieve several key objectives, including scaling monitoring of Broadcom's diverse global network, automating recurring activities, and minimizing the need for human intervention. By deploying DX NetOps, the team ultimately wanted to improve network operational efficiency.

Figure A: Operational and executive dashboards provide visibility into the work from home (VPN) experience for all end users.



## Customer Environment

Broadcom GTO has a growing deployment of DX NetOps and the solution provides the team with high-scale operations monitoring, helping fuel optimized infrastructure performance and availability and enhanced customer services. The solution currently supports the following elements:

- 13,786 devices monitored
- 658,364 polled items
- 553,299 interfaces monitored
- 15,905 metrics per second
- 100 sites
- 12+ data centers
- 400+ R&D labs

## Solution

DX NetOps Spectrum for fault management provides the Broadcom GTO with patented technology, enabling the team to realize dramatic improvements in alarm noise reduction and root cause analysis. The solution also provides reliable configuration management and change analytics to help prevent network outages due to human error or device updates.

Figure B: DX NetOps enables "one-click" access to operational intelligence like interface health, discards, errors, and application flows.

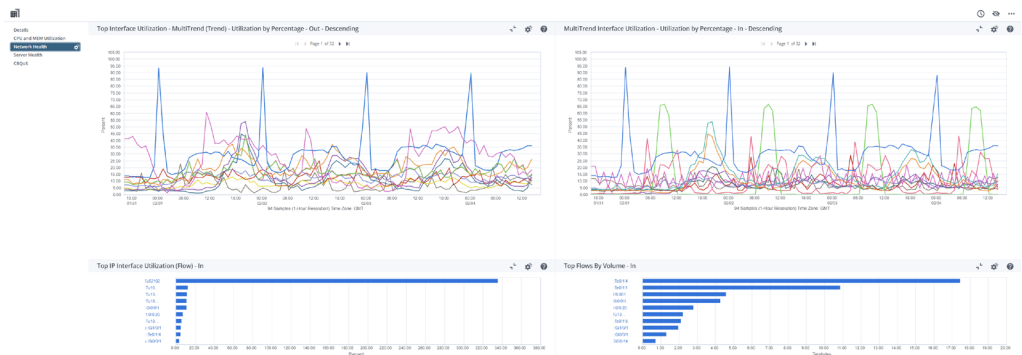
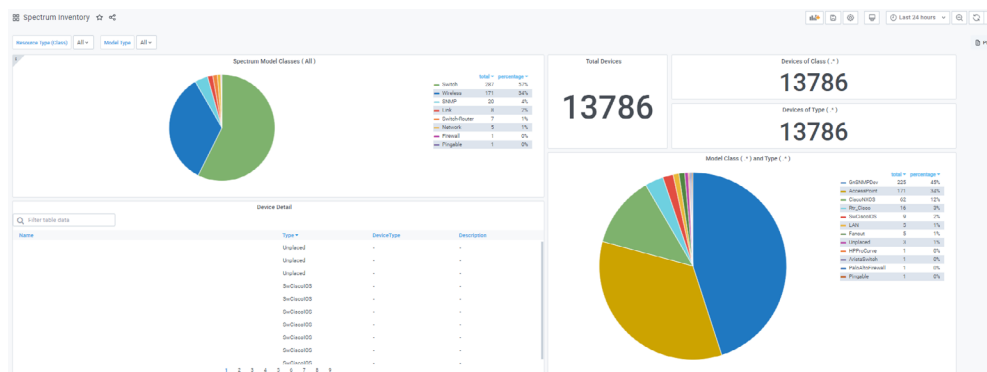


Figure C: DX NetOps offers high-scale operations monitoring that enables long-term support for growing network operations.



DX NetOps Performance Management provides network performance and capacity analytics that enable pinpoint visibility along with reliable predictions into network availability. With these capabilities, the team can reduce operational costs associated with managing network infrastructure, while speeding troubleshooting.

DX NetOps Network Flow Analysis equips Broadcom with enterprise-wide visibility into application traffic, offering coverage of every link and enabling early detection of abnormal traffic patterns. With the solution, the team can quickly identify the source of performance problems, whether they're originating at the application, user, or port level, so they can quickly restore services and ensure reliable application delivery.

By migrating off of SolarWinds and moving to DX NetOps, Broadcom GTO now has high-scale network monitoring that enables enhanced operational efficiency. The solution supports their target of approximately 13,000 network devices, a 6-times increase in monitoring scale, and allows for plenty of room for growth. The solution delivers the following advanced capabilities:

- **Improved operational efficiency.** With the solution, the team has been able to realize dramatic improvements in noise reduction, moving from raw events to actionable alarms, so they can speed mean time to resolution (MTTR). Broadcom GTO realized a 98% reduction in alerts, reducing tens of thousands of events to just hundreds of alarms.

Figure D: Alarm noise reduction at a service-level enables pinpoint focus on business-critical initiatives.

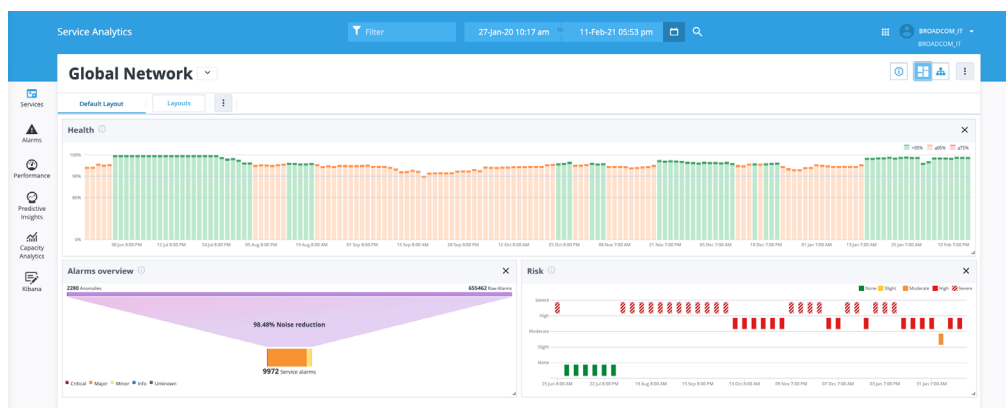
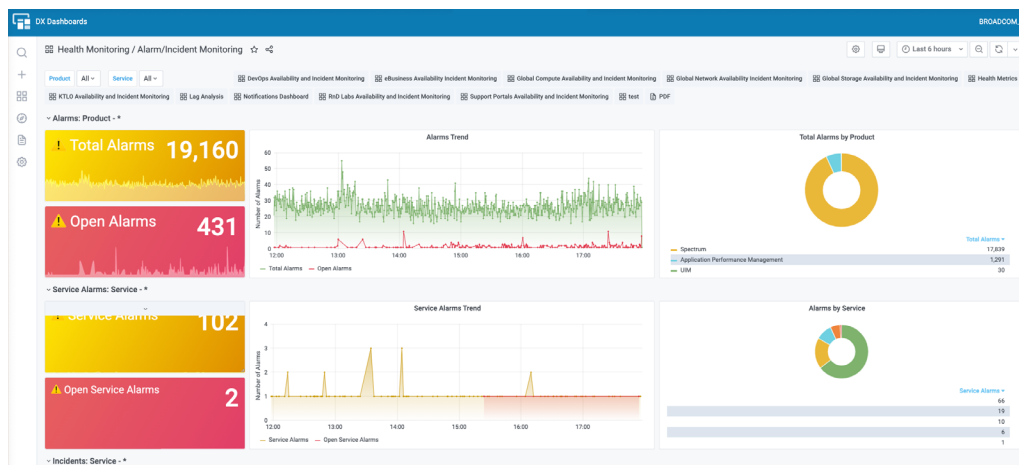
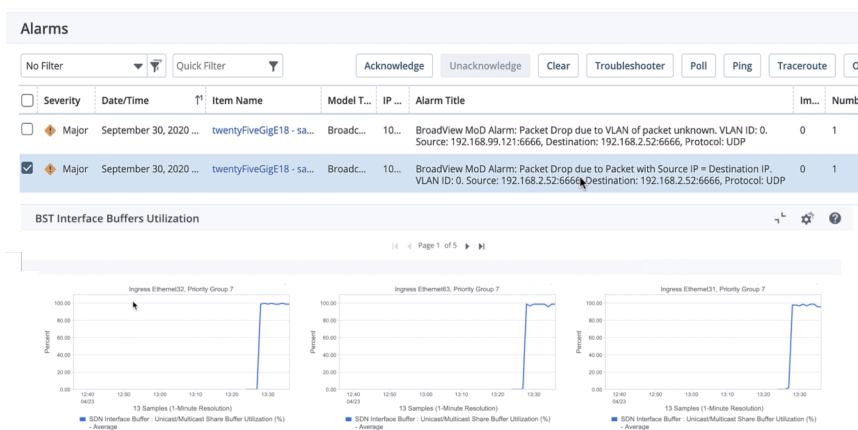


Figure E: Service-level incident management provides executive views into service health along with level 1 operational insights to improve triage times.



- **Unified, cross-team visibility.** The solution features integrated fault, performance, and flow monitoring that enables teams to quickly and easily determine the root cause of any service degradation. Now teams use a unified operational monitoring platform that supports effective, efficient collaboration across multiple operations teams, rather than having teams wasting time in war-rooms pointing fingers.
- **Optimized incident management.** DX NetOps offers integrated ticketing that enables operators to focus on issues, while seamlessly viewing root cause alarms for services, so action can be taken immediately. The solution's syslog pattern match can log messages and convert them to alerts and tickets. The solution also offers route-level fault detection and alarm generation.
- **Intuitive dashboards and actionable insights.** The solution's VPN health dashboards offer visibility into the experience of all users, with custom views for operations teams and top-level executives. These dashboards also offer insights into average load on the VPN infrastructure. The solution provides increased visibility into critical metrics like interface details and health, discards, and errors. The solution also tracks alarms, performance, faults, and flows for close to 400,000 interfaces.

Figure F: Real-time visibility into network congestion and packet loss events affecting application performance.





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- **Powerful trend analysis.** DX NetOps delivers clear views into the history of network events, so teams can understand what happened in the past and more effectively prevent potential issues.
- **Automation.** With DX NetOps, the team established customized scripts that enable automated, fast remediation. The solution also offers hassle-free, vendor-specific onboarding of new devices. It also offers automated discovery, monitoring, and topology updates. As a result, teams can ensure monitoring integrity remains intact as network changes occur—without human intervention.
- **Efficient configuration management.** Without having to log into a device, operators can do complete configuration verification at the interface level and they can easily see status and do troubleshooting. The solution enables reliable management of network configurations, so teams can detect and quickly roll back any erroneous changes—before they have a negative impact on end users.

## Results

The Broadcom solution consists of DX NetOps Spectrum, DX NetOps Performance Management, and Network Flow Analysis. This solution provides the optimized, high-scale operations monitoring platform that meets the requirements of the business, while helping deliver a consistent customer experience.

Broadcom GTO is also implementing AIOps. AIOps provides a unified console across application, infrastructure, network, and the user experience and it utilizes AI-driven event correlation, anomaly detection, and root cause analysis. This will help the Broadcom GTO team quickly understand any service impact, even at a global service level, and resolve issues faster than ever before.

"We lacked a centralized and highly scalable monitoring platform as well as the ability to quickly identify and correlate service-impacting issues across multiple teams. DX NetOps saves us on operating expenses by consolidating all of our tools into one unified and comprehensive network monitoring platform and brings all of our teams together."

—Krishna Kayala, Enterprise Architect, Broadcom GTO

For more product information, please visit [broadcom.com/netops](https://broadcom.com/netops).



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