Broadcom

Harnesses AIOps to Establish Business Service Observability

CLIENT PROFILE
Organization: Broadcom
Industry: Information Technology
Employees: 20,000+

"In the past, we had been spending too much time and money on dozens of tools, yet we still lacked the critical observability we needed. With AIOps from Broadcom, we can uniformly, efficiently, and intelligently manage our large-scale, dynamic, and distributed environments."

—Krishna Kayala, Enterprise Architect, Broadcom GTO

"For the GTO specifically, this means supporting more than 15 data centers, 100 sites, 400 R&D labs, and tens of thousands of diverse systems."

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

Like many IT organizations in large enterprises, Broadcom's global technology organization (GTO) is responsible for monitoring and maintaining large-scale, complex environments. For the GTO specifically, this means supporting more than 15 data centers, 100 sites, 400 R&D labs, and tens of thousands of diverse systems. However, unlike many other enterprises, the team at Broadcom also has to support the hosting and delivery of a range of SaaS solutions, which customers rely upon constantly for critical capabilities, including monitoring, application testing, and business management—more than 40 solutions in all.

Over time, the number of tools used to manage these environments also continued to grow, and tool and environment scope and complexity grew dramatically in the wake of various acquisitions the company made. For example, with the acquisition of Symantec, the GTO suddenly needed to contend with an additional 50 unique operational tools that had to be incorporated.

Ultimately, the number of tools in place became too unwieldy for a single team to support. That meant that when an issue was detected, no one had full visibility. Many different teams needed to be involved, often with each team reporting that the systems in their domain were performing fine. These disjointed tools led to lengthy, time consuming troubleshooting and remediation efforts—and every minute services were down, it could cost the business dearly.

Solution

The GTO team ultimately moved to adopt DX Operational Intelligence in addition to Broadcom's domain monitoring tools. Today, the team is using the end-to-end solution set to enable cohesive coverage of applications, infrastructure, and networks. They are bringing data from all their monitoring tools, including those from Broadcom as well as from a broad range of third-party tools, such as Splunk and Google Cloud's operations suite (formerly Stackdriver), into a common data lake.

These solutions provide the team with high-scale operations monitoring, helping fuel optimized infrastructure performance and availability and enhanced customer services.

"When I first saw a demonstration of the AIOps offering, I was excited about the potential, and we immediately set out to start implementing the solution," recounted Krishna Kayala, the enterprise architect within the Broadcom GTO. "We quickly saw how the solution eliminated a lot of the obstacles we'd been confronting, and within months we saw a wide range of benefits."

Following are some of the high-level advantages Broadcom's GTO has realized through their AIOps implementation.

Large-Scale Environment

- 50,000 systems monitored
- 200 corporate applications
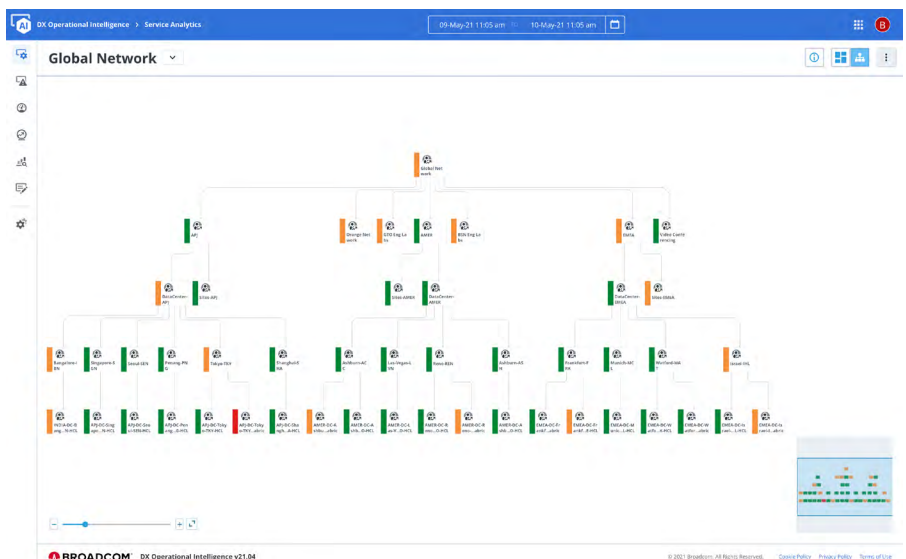- 100 sites
- 15 data centers
- 400 R&D labs

Unified, Service-Level Observability of a Diverse Ecosystem

In the end, the customer doesn't care that a storage system or database server is running fine; they care about whether they're able to access the services they need. With DX Operational Intelligence, teams have been able to leverage the holistic visibility needed to track, manage, and optimize what matters most: the performance and availability of the business services customers are counting on.

They've established this business service observability by ingesting data from a wide range of monitoring and operations tools and services, including:

- Network devices, including routers, switches, firewalls, access points, and gateways.

- Public cloud services, including AWS and approximately 20 different services within Google Cloud Platform.

- Data center infrastructure, including approximately 15 different physical and virtual technologies from such vendors as Cisco, Dell, and more.

- Log management standards like syslog and tools like Splunk.

- Application, infrastructure, and network data from Broadcom's domain monitoring tools.

Figure A: DX Operational Intelligence provides intuitive, dynamically updated topology views.

Enhanced Monitoring Scale

Before, the team was significantly restricted in the volume of distinct systems that could be monitored at any given time; it was simply too costly and difficult to monitor everything. With an AIOps platform, the team has been able to dramatically scale the volume of systems being tracked. Now, the team tracks more than 50,000 distinct devices, and they continue to add to that number. In the network monitoring domain, for example, instead of being limited to 2,000 devices, they can now track more than 15,000 devices.

Today, the team is ingesting approximately 15 TB of data every day, and they expect that to increase to 30 TB a day as more systems come online. They've amassed more than 110 PB of operations data, and that number continues to expand.

Reduced Alarm and Event Noise

With the solution, the team has been able to realize dramatic improvements in noise reduction, ranging from 57% to 98%. Considering the huge number of systems monitored—more than 50,000 currently with more systems constantly being added—this represents a major benefit.

As a result, they have been able to move from raw events to actionable alarms, so they can speed mean time to resolution (MTTR). Further, with the solution's machine learning and capabilities for ongoing optimization, the team expects the noise reduction to continue to improve on an ongoing basis.

"The noise reduction we've been able to achieve is amazingly beneficial," Kayala revealed. "Now, instead of teams chasing every alarm and every minor ticket, teams can focus on the critical issues that have an impact on our business services."

Accelerated Issue Resolution

With teams and tools broken into silos, it was inefficient and time consuming to sift through massive alarm volumes and detect and resolve issues. Now, issues are quickly, efficiently addressed. Teams are only alerted when a critical issue arises. Teams can quickly identify where in the ecosystem the cause is originating from, and drill down to get the details needed to resolve the issue.

> "The noise reduction we've been able to achieve is amazingly beneficial. Now, instead of teams chasing every alarm and every minor ticket, teams can focus on the critical issues that have an impact on our business services."

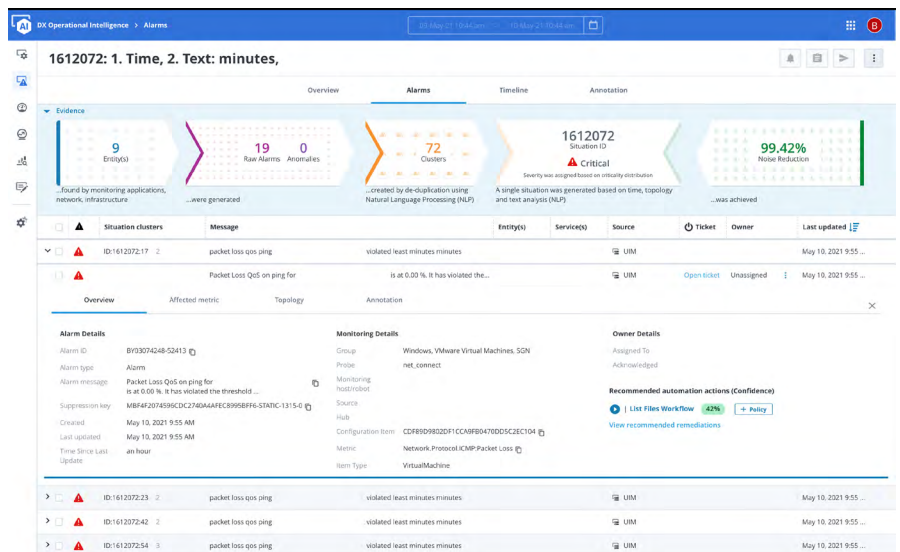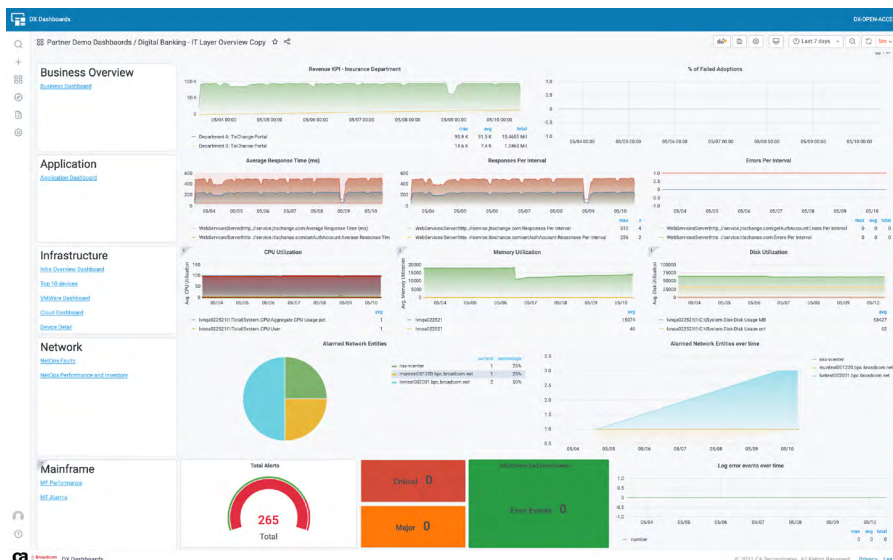Figure B: DX Operational Intelligence enabled the team to significantly reduce alarm noise.

Figure C: DX Operational Intelligence delivers dashboards that offer fast, intuitive insights.

Further, through the solution's integration with ServiceNow, the team has been able to establish intelligent, automated ticket generation and synchronization with their configuration management database (CMDB). Now, based on policies created in DX Operational Intelligence, tickets are automatically opened that include relevant details, and they are automatically routed to the appropriate group.

Unified, Targeted Visibility and Intelligence

DX Operational Intelligence provides a single platform that works for every user, from the C-level to the level-one operator. Rather than having disparate teams working with different systems, pulling data into spreadsheets or slides, everyone can go to a single resource. While everyone can be working from data from the same platform, different users can gain intuitive views around the aspects they care about, ensuring they get the right level of data at the right time.

Fundamentally, the CIO and other top-level leaders want to know whether teams are keeping the lights on. DX Operational Intelligence offers the dashboarding capabilities that make it easy for the CIO to see whether all the lights are on, and, if not, quickly drill down to find out what the issue is and how resolution is progressing.

"At any time, our executives can log into a dashboard and see the status of our critical business services," Kayala explained. "Before, getting this kind of status would have required a string of emails, with requests being passed to different teams and staff members, which represented a significant distraction and waste of time for all involved. What used to be a 15 to 20-minute process that would involve a handful of people, now takes a couple seconds."

Application teams can view performance levels and availability for the specific applications they manage, and quickly focus on what matters most to them: whether users can access the application or not. Operations heads and level one, two, and three engineers also gained the visibility they need. They can see how services they are responsible for are performing, and quickly gain the details they need.

Consolidated Tools

Lastly, another major benefit since employing DX Operational Intelligence along with Broadcom's monitoring tools, has been tool consolidation. The team has been able to retire a number of tools, including Moogsoft, New Relic, Wavefront, and SevOne. As a result, ongoing operations have been streamlined dramatically, and cost savings of approximately 50% have been realized thus far.

Results

Through implementing DX Operational Intelligence, in addition to Broadcom's end-to-end IT operations monitoring tools, the GTO has been able to realize a range of key benefits:

- **Enhanced operational efficiency**. Across the organization, teams are benefiting from faster access to insights, streamlined collaboration, and increased automation, so they can work far more efficiently and productively.

- **Accelerated mean time to resolution**. By harnessing timely, actionable intelligence, operations teams can dramatically accelerate troubleshooting and remediation efforts.

- **Improved service levels**. By establishing visibility into business service availability and performance, teams can resolve issues faster, reduce outage duration, and focus more squarely on the fixes and enhancements that have the biggest impact on the user experience.

- **Reduced costs**. The team has realized significant cost savings by offloading the expense and operational overhead associated with running dozens of disparate monitoring tools.

"In the past, we had been spending too much time and money on dozens of tools, yet we still lacked the critical observability we needed. With AIOps from Broadcom, we can uniformly, efficiently, and intelligently manage our large-scale, dynamic, and distributed environments. With the solution, we can leverage the timely, actionable intelligence we need to track and optimize what matters most: the performance of our critical business services."

—Krishna Kayala, Enterprise Architect, Broadcom GTO

For more information about DX Operational Intelligence, please visit our product page: **www.broadcom.com/operational-intelligence**

"With AIOps from Broadcom, we can uniformly, efficiently, and intelligently manage our large-scale, dynamic, and distributed environments. With the solution, we can leverage the timely, actionable intelligence we need to track and optimize what matters most: the performance of our critical business services."

ca
technologies
A **Broadcom** Company

CA
technologies
A **Broadcom** Company

About Broadcom

Broadcom Inc. (NASDAQ: AVGO) is a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions. Broadcom's category-leading product portfolio serves critical markets including data center, networking, enterprise software, broadband, wireless, storage and industrial. Our solutions include data center networking and storage, enterprise, mainframe and cyber security software focused on automation, monitoring and security, smartphone components, telecoms and factory automation. For more information, go to **www.broadcom.com**.