CASE STUDY

NetOps by Broadcom in Action

AI-Driven Network Operations Enables HCA Healthcare to Achieve a 99.99% Reduction in Alarm Noise

HCA Healthcare

CLIENT PROFILE

Industry: Healthcare

Employees: 400,000 medical personnel

CHALLENGES

Increasingly dynamic and complex networks have introduced visibility gaps, and left teams contending with lengthy troubleshooting efforts.

SOLUTION

By employing NetOps by Broadcom, the organization was able to gain a highly scalable unified data model, advanced analytics, and intelligent triage workflows.

BENEFITS

With the solution, the team could reduce alarm noise, speed triage, and more effectively manage their complex networks.

HCA Healthcare is an American for-profit operator of healthcare facilities that was founded in 1968. Based in Nashville, Tennessee, HCA Healthcare is one of the nation's leading providers of healthcare services. The healthcare provider has 400,000 medical personnel on staff, and operates 182 hospitals and approximately 2,300 ambulatory sites in 20 states and the United Kingdom. HCA Healthcare has served more than 37 million patients to date. As of 2023, HCA Healthcare was ranked #66 on the Fortune 500 rankings of the largest United States corporations by total revenue.

Challenges

For decades, HCA Healthcare has continued to expand its usage of diverse networks and networking technologies. More recently, the organization's use of networks managed by third parties, such as ISPs and cloud providers, outpaced the use of networks in their own data centers. In response, network operations center (NOC) teams have continued to adopt disparate tools to manage these networks.
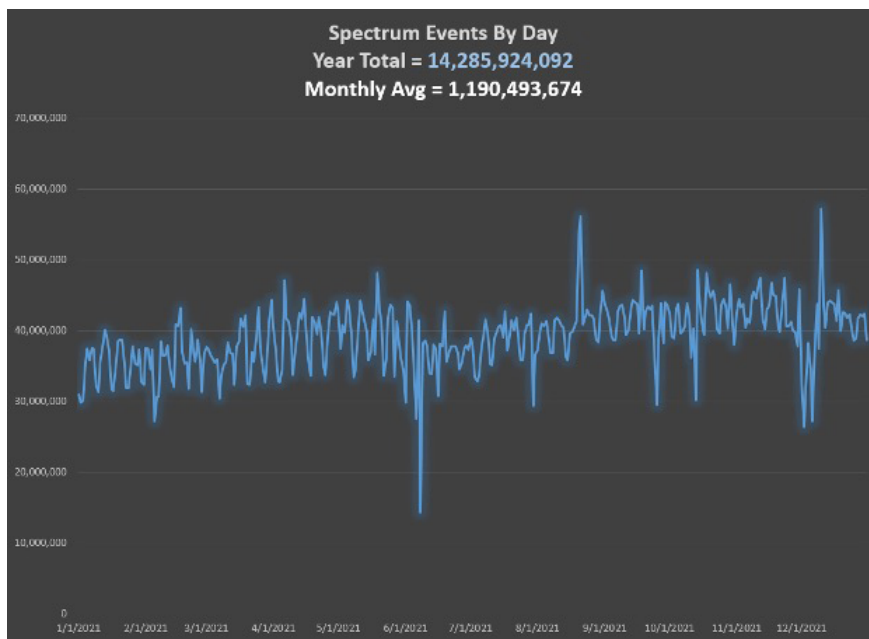

Figure 1: Before deploying NetOps by Broadcom, the NOC team at HCA Healthcare had to sift through more than 50,000 alerts and events per day in order to triage network disruptions to patient care.

> **"This growth in network usage and siloed tools, as well as the adoption of software-defined technologies, has served to create a dramatic proliferation in event and alarm volumes."**

Additionally, like many healthcare providers, HCA Healthcare has seen dramatic growth in the use of the internet and cloud resources for patient care. Where NOC teams used to be able to assume traffic would traverse static network delivery paths, that's no longer the case.

This change has left NOC teams with visibility gaps in monitoring performance. This growth in network usage and siloed tools, as well as the adoption of software-defined technologies, has served to create a dramatic proliferation in event and alarm volumes. Further, they're also receiving more alerts from network edge devices used to monitor patient health. This left the NOC team contending with increasingly lengthy triage and troubleshooting times.

Patient data from mobile EMS units, clinics, wearable sensors, and in-home devices must be transmitted to and from the cloud now. In US hospitals today, 10-15 edge devices are connected to each hospital bed, monitoring the patient's current real time status. By 2025, it is estimated that 75% of medical data will be generated at the network edge. Additionally, the global market for connected medical devices is expected to grow to an astronomical $158 billion in 2022, up from $41 billion in 2017.[1]

To address these challenges, the team at HCA Healthcare set out to find a solution that would address these objectives:

• Give engineers a dashboard to quickly assess if facilities or sites were down.

• Enhance the team's ability to create alerts for sites that are experiencing large numbers of unresponsive network devices.

• Build network services that reflect the services relied upon by the business.

• Alert on what's important to the business.

Critical Alerts Forwarded for Ticketing
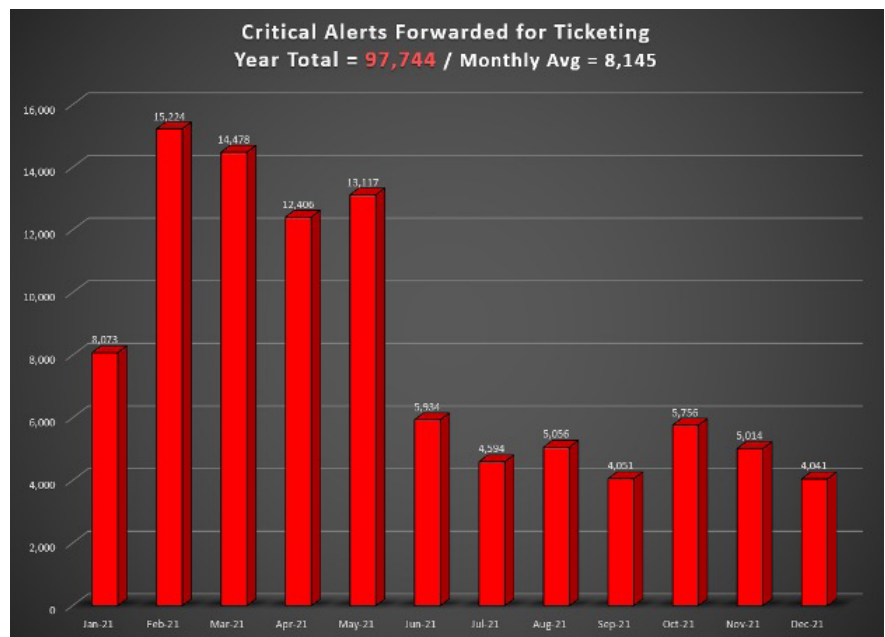**Year Total = 97,744 / Monthly Avg = 8,145**

Figure 2: NetOps by Broadcom's powerful analytics offer dramatic alarm noise reduction, enabling intelligent escalations to level-two and level-three teams.

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1 Deloitte, "**Medtech and the Internet of Medical Things**," July 2018

"These analytics enable teams to uncover patterns, identify issues faster, and anticipate how changes will affect the user experience or network health."
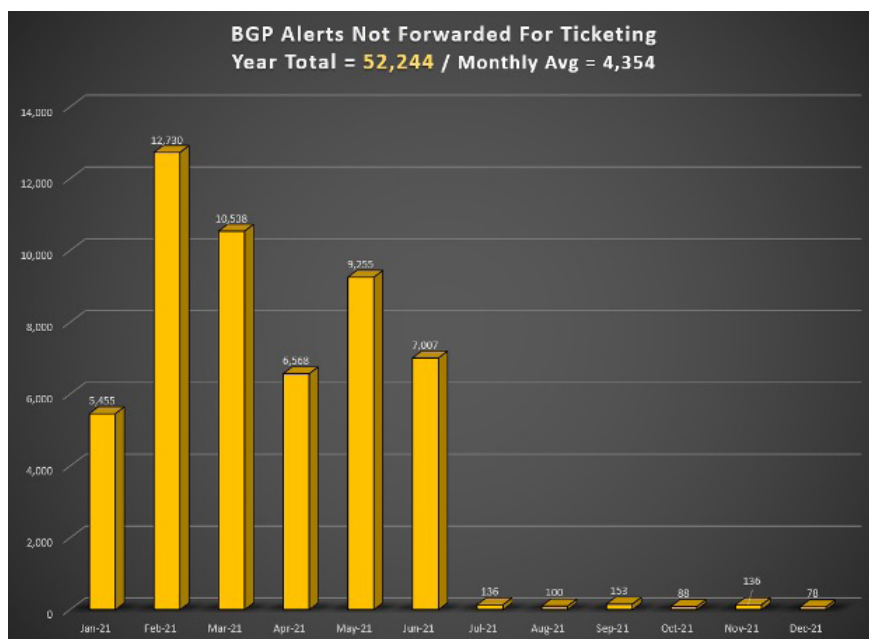

BGP Alerts Not Forwarded For Ticketing
Year Total = **52,244** / Monthly Avg = 4,354

Figure 3: An example of NetOps by Broadcom's event and alarm noise reduction for HCA Healthcare's network teams.

Solution

HCA Healthcare understood that the only way to combat these issues was by investing in an AI-driven network monitoring and management solution that provides these capabilities:

- **A highly scalable, unified data model**. Every piece of multi-vendor network data needs to be collected by one solution. This one solution must be able to gather, normalize, and correlate disparate data sets from across the organization's multi-vendor, -technology, and -protocol network environments. This data needs to be presented in intelligent, unified views that accurately depict network health, delivering the "one source of truth" that eludes many teams today.

- **Advanced analytics**. Advanced and patented analytics must be applied to this collected data, employing techniques like event correlation, fault suppression, alarm noise reduction, topology and volatility analytics, baselining, and deviation and anomaly detection. Teams need analytics that correlate network fault, performance, and flow data. These analytics enable teams to uncover patterns, identify issues faster, and anticipate how changes will affect the user experience or network health.

- **Intelligent triage workflows**. The results of the collected data and analytics must be presented to the operator in easy-to-understand troubleshooting workflows. The solution must minimize alarm noise, so network operations teams can quickly diagnose issues and get to the root cause. This solution must also enable teams to quickly dive into a specific technology domain in order to get the details required.

> **"With the solution, the team could reduce alarm noise, speed triage, and more effectively manage their complex networks, which left the organization better positioned to deliver consistent, quality patient care."**

Benefits

NetOps by Broadcom delivered the comprehensive network management and observability the NOC team at HCA Healthcare needed. With the solution, the team could reduce alarm noise, speed triage, and more effectively manage their complex networks, which left the organization better positioned to deliver consistent, quality patient care.