TECHNOLOGY BRIEF

CARRIER-GRADE NETWORK OBSERVABILITY

A Technology Brief for Telco Network Operations

KEY BENEFITS FOR TELCO LEADERSHIP

- **AI-enabled cost savings and operational efficiencies**. Simplify operations, cut costs, and accelerate MTTR and MTTI with AI-enabled diagnosis and cross-domain remediation. Streamline workflows through in-platform assignment and email notification for troubleshooters.
- **Superior service availability and subscriber experience**. Meet SLAs and reduce churn by correlating network health with user experience across hybrid environments and multi-tenant services. Gain advanced notifications that enable support teams to mitigate issues before customers are affected.
- **Strategic business and data enablement**. Enable service monetization by standardizing data for AI-driven insights and faster time to market. Leverage integrated, executive-level visibility and OSS integration to align business processes.
- **Enhanced network resilience and compliance**. Enforce golden configurations to prevent errors, ensure compliance, and enable resilient service delivery.

Executive Summary: Beyond Traditional Monitoring

Today's telecommunications (telco) providers are moving aggressively toward hybrid, multi-cloud architectures and complex cloud-native service delivery. In the wake of these moves, their traditional monitoring solutions have failed to keep pace. The result is operational silos, disjointed visibility, and exponential growth in data volumes. Further, the static, labor-intensive nature of these tools leave teams unable to cope with the complexity of modern networks, making rapid root-cause analysis impossible.

These tool limitations leave telcos contending with poor service quality, inflated operational expenses, and delayed delivery of new revenue-generating service offerings. To combat these challenges, operational teams must move from reactive monitoring to proactive, AI-enabled approaches. They need to establish carrier-grade network observability that provides immediate, actionable intelligence and leverage automation that facilitates closed-loop problem remediation.

Network Observability by Broadcom is the unified data platform that enables telcos to deliver ultra-reliable connectivity and exceptional service quality. By delivering a foundation of advanced active monitoring and robust analytics, the solution turns disparate network data into contextual, AI-enabled insights. These insights empower teams to optimize efficiency, meet stringent SLAs, and capitalize on new service monetization opportunities.

The Challenges Posed by Complex Modern Telco Networks

Major telcos operate massive, intricate network fabrics. These environments present several key challenges, which threaten to erode profitability and customer loyalty:

Visibility Gaps

Services increasingly rely on a mix of private, public, and sovereign cloud environments. These multi-cloud ecosystems introduce dangerous visibility gaps, leaving teams ill-equipped to connect infrastructure performance metrics to the quality of the user experience. This leaves telcos exposed to compromised service levels that result in increased churn and lost revenue.

Worsening Mean-Time-to-Resolution (MTTR) and Mean-Time-to-Innocence (MTTI) Metrics

Today's telcos deliver a range of critical, high-value services, such as cloud connectivity, enterprise virtual private networks (VPNs), and managed network services. When disruptions of these services arise, teams must be able to perform immediate diagnosis and remediation. However, today's complex, multi-tenant, and multi-service environments, including managed LAN, Wi-Fi, and SD-WAN, make this increasingly difficult and time consuming. For example, a fault on shared infrastructure can affect many customers, yet be very difficult for teams to detect. This makes root cause analysis challenging and time consuming.

To meet SLAs and maintain their organization's competitive edge, telco operations teams must be able to reduce MTTR and MTTI. In these complex, critical environments, teams must move beyond manual triage. They need to leverage automated, AI-enabled root cause analysis that effectively cuts through massive volumes of operational data and eliminates noise to reveal critical insights.

Heightened Risk of Misconfigurations and Compliance Failures

Managing secure, compliant configurations across millions of network elements, especially customer edge devices, presents a significant operational burden. Labor-intensive, manual configuration approaches increase the likelihood of human error and configuration drift, which can lead to compliance violations and service degradations.

KEY CAPABILITIES

- **User experience**. Provides actionable visibility into network and application performance from the subscriber's perspective. Enables active experience monitoring across multi-service topologies, including SD-WAN, managed LAN, and enterprise Wi-Fi.
- **Fault analytics**. Reduces MTTR and MTTI by rapidly isolating error domains. Employs automated, service-centric root cause analysis, incorporating context from across multi-vendor networks. Leverages data from shared components, topologies, and configuration management services.
- **Modern network monitoring**. Optimizes SDx (software-defined everything) performance by providing comprehensive visibility into SD-WAN, software-defined data center (SDDC), and the API controllers vital for 5G and cloud-native environments.
- **Performance analytics**. Ensures service availability and capacity by leveraging algorithmic anomaly detection, automated baselining, and proactive capacity planning.
- **Flow analytics**. Improves network efficiency with end-to-end traffic visibility, enabling optimal resource allocation and service monetization.
- **Network configuration**. Enhances security and compliance by enabling teams to establish "golden" configurations and monitor, enforce, and update those configurations across all devices.

The Solution: Network Observability by Broadcom

Network Observability by Broadcom is a unified network intelligence platform that enables teams to move beyond simple fault detection. The platform provides the context and actionable insights necessary to understand what is happening and why—across all domains. This platform delivers deep, contextual, and AI-enabled analytics.

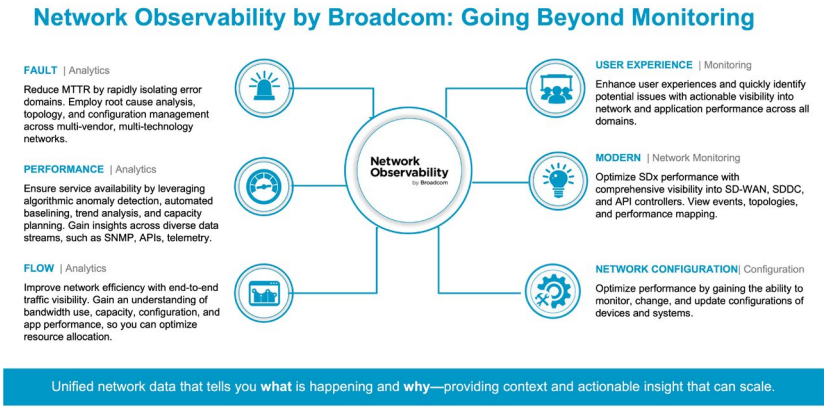
Network Observability by Broadcom represents a unified platform that delivers comprehensive capabilities across a range of operational areas, including service quality and user experience insights, fault correlation, performance assurance, and configuration management. The platform's architectural strength lies in its ability to bring these different sets of intelligence together, providing immediate, contextual insights that paint a complete operational picture and enable faster root cause identification. For example, the platform can overlay performance and flow data directly onto a topology view.

The platform provides unified visibility, enabling teams to eliminate operational silos and avoid having to use multiple, disjointed consoles. By leveraging these capabilities, operations teams can dramatically reduce MTTR and MTTI and prevent disruptions in high-value services, including cloud connectivity, enterprise VPNs, SD-WAN, and more.

The solution features capabilities that span the following six operational areas:

- **Fault analytics**. Network Observability by Broadcom employs automated, service-centric root cause analysis to pinpoint error domains—speeding MTTR. This capability allows operators to start with a customer's reported service issue (such as a Wi-Fi login failure) and instantly drill down through the entire service topology to the exact network component causing the fault, even if it resides in shared infrastructure. This fault diagnosis is enriched with context from performance, flow, and user experience data, accelerating resolution by minimizing the need to switch between different operational views.
- **Performance analytics**. With the platform's algorithmic anomaly detection and intelligent capacity planning, teams can continuously ensure service availability. These insights are correlated with user experience and fault data, helping teams preempt degradations that could have an impact on services.
- **Flow analytics**. Network Observability by Broadcom offers end-to-end traffic visibility that enables teams to optimize network efficiency, resource allocation, and service monetization. The platform uses flow data to enrich topology and performance views, helping operators rapidly identify the source of congestion or service degradation.
- **User experience**. With the platform's actionable, subscriber-centric visibility, teams can enhance service availability and user experience. It offers active experience monitoring that directly links customer-facing symptoms (such as authentication failures) to infrastructure faults. The platform can provide level-one staff with automated notifications of issues—before customers report them.
- **Network monitoring that spans legacy and modern networks**. The platform helps teams track and optimize performance across their software-defined networks, including SD-WAN and SDDC environments. The platform seamlessly incorporates this intelligence in a unified fashion to provide end-to-end visibility of network delivery paths, including those that span both legacy and cloud-native infrastructure.
- **Network configuration**. Network Observability by Broadcom enables teams to establish secure, compliant operations. With the platform, teams can create "golden" configurations for all devices and monitor and enforce adherence to these standards. When compliance issues are detected, they are automatically correlated with performance degradation and service ticket data to enable prioritized, closed-loop remediation.

"Network Observability by Broadcom transforms raw network telemetry into a valuable enterprise asset."



Enabling High-Value Telco Service Offerings

Network Observability by Broadcom delivers the advanced capabilities that enable telcos to address their core operational and business challenges. With the platform, telcos can achieve these objectives:

- **Monetize high quality cloud services**. The platform delivers the deep, real-time visibility and analytics needed to back premium SLA tiers for cloud-hosted enterprise services. This enables teams to enhance core connectivity services and accelerate issue resolution. In the process, telcos can assure customers of guaranteed service quality, establish the foundation for higher-tier service pricing, and boost differentiation in a crowded market.
- **Monitor hybrid, private, and sovereign cloud services**. With the platform, telcos can provide resilient, high performance, and fully managed cloud solutions. By unifying and correlating user experience and infrastructure monitoring, the platform enables telcos to minimize downtime risk and deliver differentiated, integrated multi-cloud services that are backed by MTTR guarantees.
- **Offer high-value configuration and compliance services**. The platform supports the delivery of lucrative, value-added services, enabling teams to provide enhanced security and compliance governance. By enforcing "golden" configuration standards and minimizing human error, the platform reduces customer risk and boosts recurring revenue.
- **Provide AI-enabled, service-wide diagnostics and remediation**. The platform automates root cause analysis, offering context from shared network components. This dramatically improves the profitability of every service. Within the platform, teams can directly assign troubleshooters to a specific issue and automatically generate intelligent notifications and service tickets containing rich diagnostic context. This ensures that tickets are opened only for real issues, while providing the supporting information that fuels faster, more efficient remediation and near-instantaneous resolution. By minimizing unnecessary or misdirected service tickets and accelerating MTTR, the platform directly reduces operating expenses. Consequently, teams can boost internal efficiency metrics and support more ambitious SLA commitments.
- **Deliver branded, customizable dashboards and reports for users**. The platform enables telcos to offer a differentiated customer experience by enabling clients to access secure, customized views of their service performance. The platform also provides crucial business-level visibility, so product owners and leaders can quickly assess the health of shared backbone resources along with the status of individual customer services. This transparency enhances customer trust and validates the delivery of promised SLAs, providing a competitive edge.

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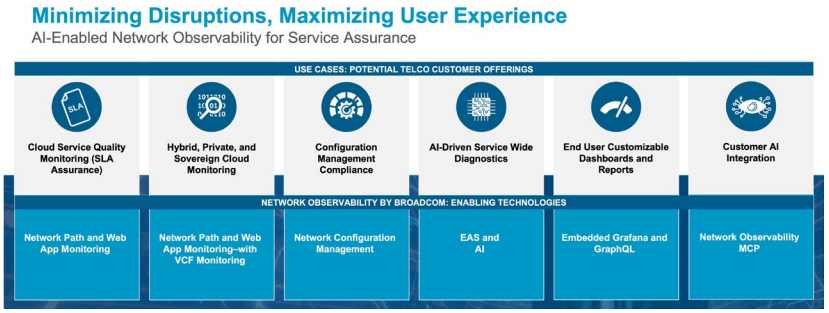


- **Harness customer AI integrations and monetize insights**. Network Observability by Broadcom transforms raw network telemetry into a valuable enterprise asset. The platform represents the core source of high-fidelity network data for telco services and applications, including AI and machine learning models and essential operational support systems (OSS). It is an open and extensible platform that can use Kafka to stream data to any third-party data lake or intelligence layer, including Splunk and Elastic. In addition, the platform can use APIs to deliver network operations insights. In this way, telcos can maximize the utility of network intelligence for strategic business planning and new service design and improve alignment between network and business operations. Further, through its seamless OSS integration, operations teams can view active incident details, track assigned workers, and see ticket numbers within the platform.

Network Observability by Broadcom in Action

Challenges

In today's complex, multi-service network environments, telcos struggle to quickly pinpoint the root cause of issues that affect services. This is especially true when issues arise in shared infrastructure or environments that span diverse technologies like Wi-Fi, managed LAN, and SD-WAN. This lack of visibility often leads to fragmented operations, slower resolution times, and frustrated subscribers.

Solution

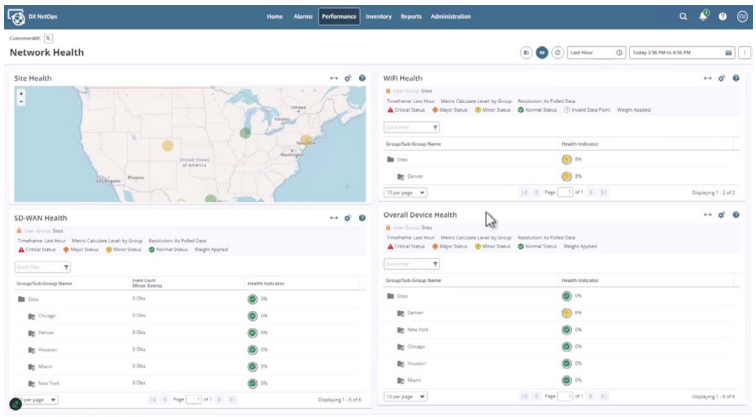
Network Observability by Broadcom provides a unified, end-to-end view of network and service performance and experience, enabling telcos to cultivate network operations excellence and enhance service delivery to customers.

Results—See Them For Yourself

Network Observability by Broadcom redefines network operations for telcos. The team at Broadcom has created a solution demonstration that reveals how the platform enables a shift from reactive troubleshooting to proactive service assurance. In the demo, a customer in Denver is encountering a Wi-Fi login failure. By correlating SD-WAN packet loss, the platform can quickly and accurately pinpoint that the issue is being caused by a RADIUS server outage in New York—enabling dramatic reductions in MTTR metrics. The demo reveals how operators can receive real-time alerts and contextualized component views. It also shows how the platform provides unified operational and executive dashboards that integrate with OSS for rapid resolution and full-spectrum incident visibility. (Sign up to schedule the demo and see the solution in action.)

LEARN MORE

Visit our Network Observability by Broadcom for Service Providers page to discover how you can boost operational efficiency, ensure optimized service levels, and accelerate cloud service monetization. In addition, you can contact your Broadcom representative today for a personalized executive briefing.



Customer Case Study: BT Ireland Builds the Foundation for AI-Driven Network Operations

From Reactive Silos to Observability Intelligence

BT Ireland recognized that their ambitious AI and automation roadmap was fundamentally constrained by a fragmented, reactive network monitoring infrastructure. Data volumes were massive but siloed, forcing operations teams to undertake manual triage processes that could span weeks. This created significant inconsistency and eroded confidence in early automation attempts.

To eliminate risk and set the stage to address future scalability demands, the organization partnered with Broadcom. Teams at BT deployed Network Observability by Broadcom. They took a data-centric approach and adopted a strategic "reverse deployment" model. This meant prioritizing the collection of only contextualized, meaningful data that was aligned directly with proven triage scenarios.

By employing this intelligent approach, the organization was able to transform raw network metrics into observability intelligence. In this way, they could drastically reduce data noise and operationalize the delivery of the clean data needed for high-accuracy automation models. This enabled predictable automation of network operations workflows, including provisioning and fault resolution. This ultimately fostered trust in automation and set the stage for improved business outcomes. To learn more, read the case study.

About Us

Broadcom Inc. (NASDAQ: AVGO) is a global technology leader that designs, develops, and supplies a broad range of semiconductor, enterprise software and security solutions. Broadcom's category-leading product portfolio serves critical markets including cloud, data center, networking, broadband, wireless, storage, industrial, and enterprise software. Our solutions include service provider and enterprise networking and storage, mobile device and broadband connectivity, mainframe, cybersecurity, and private and hybrid cloud infrastructure. Broadcom is a Delaware corporation headquartered in Palo Alto, CA. For more information, go to www.broadcom.com.