



MANAGING HYBRID NETWORK INFRASTRUCTURES WITH THE OPTX PLATFORM

IN THE AGE OF DIGITAL TRANSFORMATION, HIGH-PERFORMANCE IT INFRASTRUCTURES ARE CRITICAL FOR BUSINESS SUCCESS.

Companies care deeply about the applications they rely on – such as contact center, unified communications, customer resource management and billing applications – but are typically not directly concerned with their network infrastructure. Their IT departments are, however, as they understand that the network is the foundation for all business services and any interruptions or degradations within it can have a serious impact on the business.

Unfortunately for them, today's networks are getting more complicated. Network infrastructures are no longer comprised primarily of physical equipment located on-premises. They are now hybrid infrastructures consisting of traditional equipment, software defined networks and hybrid cloud. This makes managing the infrastructure to provide business service assurance more difficult than ever.

Complicating the situation is the fact that many legacy network management products focus primarily on events and logs, looking for availability problems for discrete

pieces of equipment. This is no longer good enough as networks have built-in resiliency and thus the majority of problems are related to network performance, not availability. And while IT organizations obviously still care about equipment availability as these issues must be addressed, to truly meet business needs, they need platforms that integrate performance and can quickly show the health of the services running across the network.

The Optx Platform manages the performance and availability of the hybrid infrastructures today's businesses rely on with end-to-end, top-to-bottom management supporting traditional networks and SDx in a single platform. Machine learning and automation provide the ability to predict problems before they happen while also delivering more accurate root cause analysis by automating troubleshooting tasks.

With this functionality, the Optx Platform provides actionable intelligence when problems arise rather than simply presenting an abundance of data for use in manual troubleshooting. In addition, the platform's Business Impact Monitoring

ATSG SERVICE ASSURANCE PLATFORM

The Optx Platform provides actionable intelligence when problems arise rather than simply presenting an abundance of data for use in manual troubleshooting. In addition, the platform's Business Impact Monitoring functionality prioritizes all issues and potential issues based on business service impact to ensure they are addressed in the most efficient order. The platform significantly reduces MTTR to maintain peak performance for the infrastructure.

MANAGEMENT AND TROUBLESHOOTING CHALLENGES

There are numerous challenges in managing and troubleshooting today's network infrastructures. Many traditional monitoring products have been acquired by companies who are not focused on management and their older codebases are hard to update for newer technology.

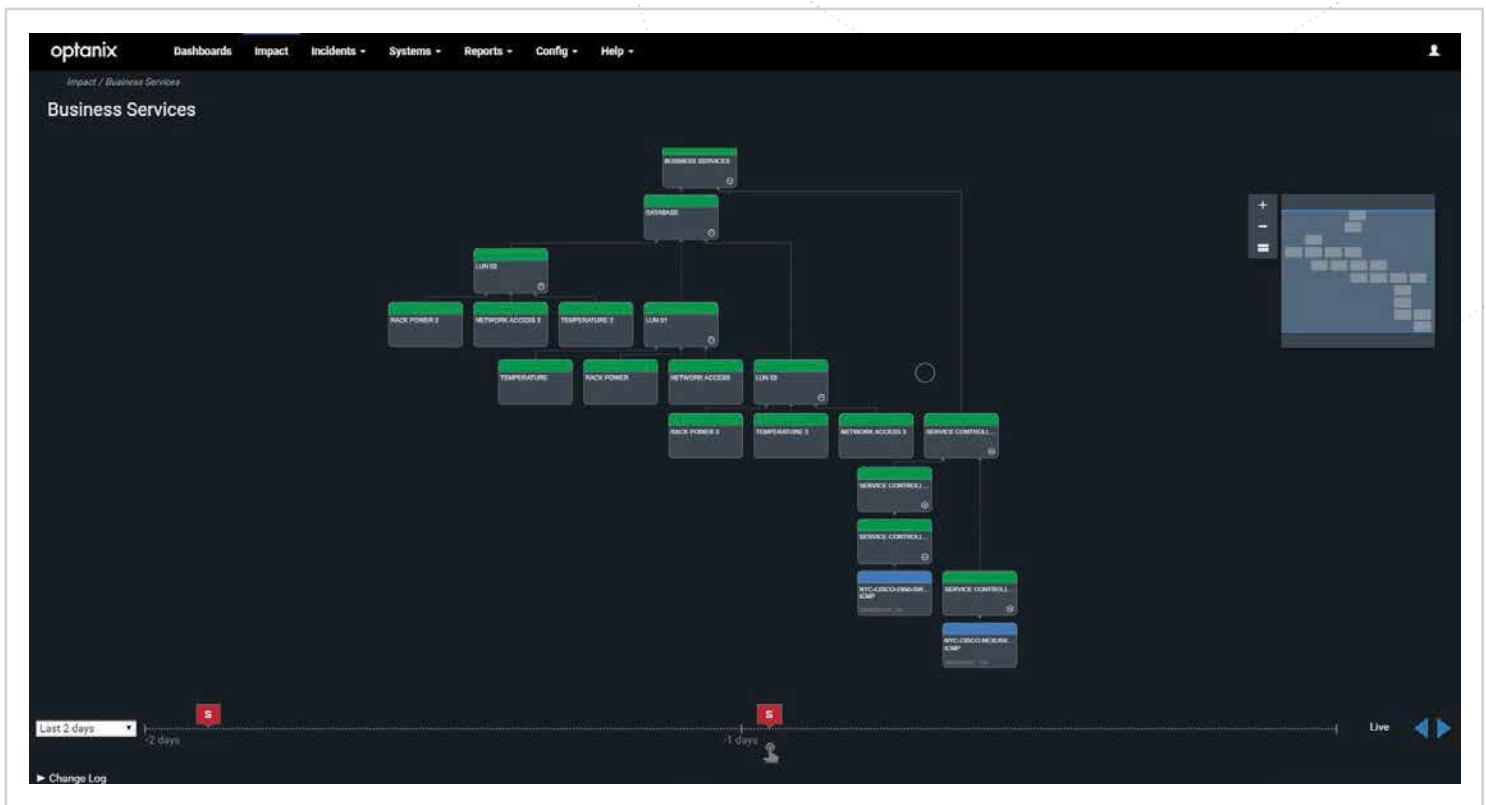
Oftentimes, multiple poorly integrated tools are used to monitor the infrastructure. Unfortunately, their disparate data sets make it difficult for them to do true root cause analysis, ultimately leaving support engineers to complete the time-

consuming task of manually parsing all the data the tools collect to find the cause of problems. Further, business service monitoring is complicated when the use of multiple point tools leaves the operations staff to figure out business impact and prioritize issues.

Vendors have been talking about proactive management for years and have been delivering on that promise. Proactive management is nice as it alerts IT to a problem prior to a user complaining of that problem – however, with digital transformation and the heavy

reliance on IT service for business success, knowing there is a problem before a user reports it is no longer enough.

To keep the infrastructure performing flawlessly, predictive management is required to give IT fair warning and the ability to prevent problems before they occur. Predictive management requires machine learning and dynamic thresholding to show when something is abnormal or heading for abnormality. Traditional static thresholds are no longer adequate.



Managing the infrastructure based on the business services it supports

THE OPTX PLATFORM

The Optx Platform provides predictive and proactive business service assurance across hybrid infrastructures – physical, virtual, wired and wireless. It offers actionable intelligence for prioritizing and addressing problems before they impact critical business services to protect revenue, improve customer experience and reduce IT costs.

The platform bridges the gap between managing traditional route/switch and software-defined network infrastructure by extending the functionality to SD-WAN and SDDC and managing them in the same platform with traditional infrastructure. Advanced analytics and root cause analysis predictively and proactively detect new and impending problems, quickly analyze them from multiple angles to find the true cause, and provide actionable intelligence for quick remediation.

With business service monitoring and prioritization, these root cause problems are prioritized based on the criticality of the impacted business services to ensure the most important problems are addressed quickly. Streamlined remediation and management workflows reduce MTTR through automation, and secure, multi-tenant remote access further reduces MTTR by enabling experts to rapidly solve problems.

SDx Support

SDx support integrates SD-WAN and SDDC into the overall platform in a seamless solution along with traditional networks and systems, providing onboarding, provisioning

and management for software defined networks. It extends Smart Analytics, Business Impact Monitoring (BIM), Root Cause Analysis (RCA) and other critical Optx Platform functionality to business services running across the SDx infrastructure, enabling predictive and proactive detection along with reduced MTTR when issues arise. The platform is scalable to support the largest cloud/hybrid cloud SDx deployments while bridging the gap between software-defined and traditional infrastructures.

Smart Analytics

Smart Analytics detects deviations from normal and provides predictive and proactive alerts, enabling the IT team to address problems before they impact critical business services and cause more widespread issues. It looks at data over time to automatically create dynamic baselines that account for time of day and day of week.

In addition to presenting these baselines in dashboards and reports, Smart Analytics creates thresholds based on both deviation from normal and rate of change to drive accurate alerts for abnormalities. Building on top of baselines and thresholds, it analyzes trends for predictive analysis and capacity management to warn of impending problems and capacity requirements.

Business Impact Monitoring

Business Impact Monitoring delivers real-time situational awareness of business services, enabling IT to prioritize and address issues quickly and thereby limit impact to critical business processes. It automatically

WHAT DOES THE OPTX PLATFORM DO?

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maps business services to the IT services and components that support them. Predictive and proactive alerts are prioritized based on the criticality of the affected business processes to give the IT team the information they need to meet SLAs and ensure the business can operate at full capacity.

Root Cause Analysis

ATSG's RCA streamlines workflows, reducing MTTR and false alarms to ensure business service issues are resolved quickly to maintain smooth business operation. The platform's patented RCA engine uses multi-perspective analysis to detect problems, find why they occurred and reduce false alarms. The workflow is optimized for managed service providers through its use of automation to analyze problems more deeply, take corrective actions and retest prior to creating a ticket. This increases accuracy and efficiency while reducing MTTR

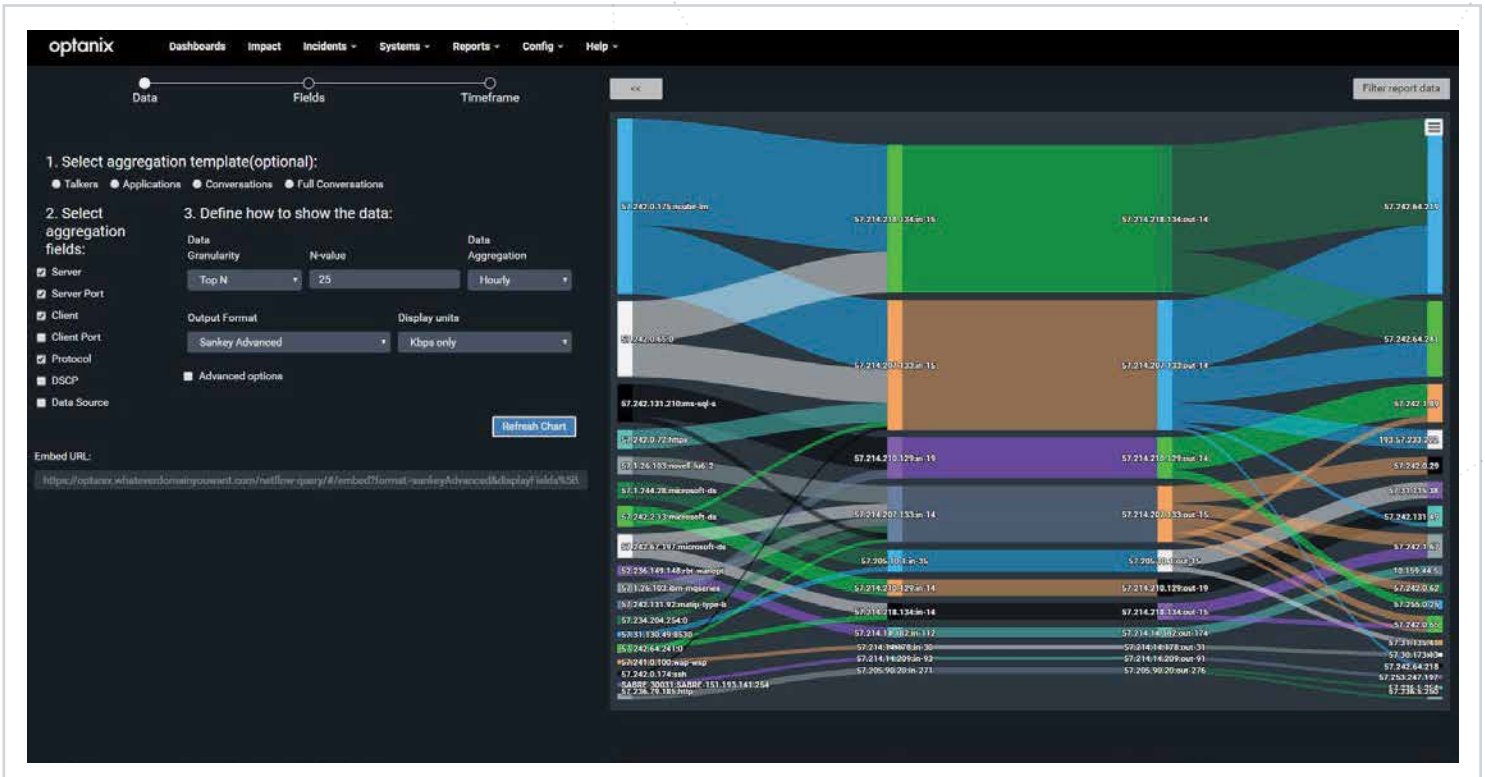
Flow Analysis

Flow analysis features integrate NetFlow and SFlow into the Optx Platform, enhancing functionality such as BIM, Smart Analytics, reporting, alerting and troubleshooting. Flow data gives a more accurate picture of business service performance and availability and is available when drilling into infrastructure alerts to aid troubleshooting, thus reducing MTTR.

Dashboards and Reporting

ATSG's dashboards and reports deliver exactly the business service and infrastructure information needed by business functions across the organization. They can be customized based on role or individual to provide quick access to only the most relevant real-time and historical information. They offer out-of-the-box dashboards and reports for various technologies and functions.

The platform's standard dashboards and reports can be customized to meet the needs of various groups and individuals across the business. Fully custom dashboards and reports can also be created from the ground up using functions provided in the Optx Platform. And to ensure everyone can access the reports they need, reports can be automatically generated and stored on the platform or automatically sent to email recipients in PDF form.



Flow analysis

USING THE OPTX PLATFORM TO SOLVE NETWORK INFRASTRUCTURE ISSUES

Successful business operations in today's digital world require a solid network infrastructure that's

available 24x7 and operating at peak performance. Effectively monitoring and managing this environment requires a platform capable of top-to-bottom, end-to-end monitoring with the ability to map business services, predict problems and provide accurate RCA with actionable intelligence. The Optx Platform

offers this and more for the hybrid network infrastructure as well as the applications running on top of it. A small sample of network-specific problems and solutions provided by the Optx Platform are outlined on the following page.

BGP Monitoring

Border Gateway Protocol (BGP) makes it possible to communicate across the Internet. Given its important function, engineers must manage BGP for performance and troubleshoot it when it experiences issues. It's especially important that BGP be managed when remote machines are part of the business process and it's not cost effective to dispatch a technician every time there is a problem – that importance is magnified even further if you are getting false alarms. The Optx Platform provides BGP monitoring that supports the dynamic nature of the solution, understanding the neighbor relationships and reducing false alarms.

In one real-world example, a bank with 4,000 remote ATMs at non-bank locations had replaced the older dial-up connections the machines used for connectivity – which were not only slow but a single point of failure – with BGP and VPN tunnels. With redundant connections to each ATM, this resulted in 8,000 remote routers to manage. The bank didn't want to dispatch a tech and a bonded supervisor each time there was an issue, especially to find out it was a false alarm, such as a power outage at the site.

After implementing the Optx Platform, they were able to understand when ATMs were actually down and to set tighter SLAs on ATM availability at high-use facilities. When problems occurred, the bank was able to quickly determine if they were caused by a head-end issue or a remote issue, allowing them to prioritize faults and dispatch people to the proper place if required. In addition, they were able to monitor paths to understand if there was an issue that could be addressed

without dispatching people to an ATM facility.

The Optx Platform provided correlation, root cause analysis and business impact analysis, creating just a single alarm for each issue the customer encountered and providing actionable intelligence that allowed them to address problems quickly and efficiently with limited business impact.

Performance Monitoring with IP SLA

Internet protocol service-level agreement (IP SLA) is used by many organizations to ensure the network is passing traffic efficiently and to aid in troubleshooting problems where the network may or may not be impacting application performance. IP SLA is used to send synthetic transactions across the network, including the WAN, among multiple locations. By using synthetic transactions, it is possible to surveil the network path without having access to equipment along the path, such as when monitoring traffic through a provider cloud. The information can be tied into SLAs to hold carriers responsible for fixing issues in their networks by providing proof that the issue is in the carrier network and not at the edge owned by the business.

The Optx Platform's IP SLA dashboard provides quick and simple analysis of these synthetic transactions. In many cases the information provided quickly points to, or eliminates, the network as a problem during troubleshooting, providing the ability to truly manage the network, not just the components or real user traffic.

The packet analysis provided on the IP SLA dashboard proved invaluable for one customer that found an issue where packet shaping and

QoS configured on the same device were competing with each other and causing longer than expected round-trip time for traffic across a carrier network.

Spanning Tree – Covering the Basic Networking Principles

Spanning tree has been around for years and isn't that exciting, but it is a basic function in networking that must still be managed. The Optx Platform includes a spanning tree dashboard that tracks all switches and equipment running the Spanning Tree Protocol (STP) – as well as the last time the protocol was changed, the number of changes that occurred and more – to give a full view of spanning tree status.

After one customer implemented the Optx Platform, their operations team launched the spanning tree dashboard and was quickly able to see that two switches had undergone 5,000 STP changes in 30 days. These switches were attached to the company's Citrix server and all of the company's employees did their work from a Citrix desktop, so there were obviously performance problems, yet nobody had complained. Further investigations showed a configuration error that was causing the network to re-converge every 30 seconds or so. This persistent, previously unknown problem was solved within 30 minutes of implementing the Optx Platform.

THE OPTX PLATFORM BRIDGES THE MANAGEMENT GAPS IN HYBRID NETWORK INFRASTRUCTURES

The Optx Platform provides predictive and proactive business service assurance across hybrid infrastructures with actionable intelligence for prioritizing and addressing problems before they impact critical business services to protect revenue, improve customer experience and reduce IT costs.

Managing top to bottom and end to end requires more than a single pane of glass. The Optx Platform extends its core management capabilities across physical and virtual networks as well as the business services and applications they support. This not only gives a full picture, but also allows the platform to perform true root cause analysis and business impact monitoring for an entire service, not just a component of a service. In the end, it reduces complexity, increases accuracy and reduces MTTR, keeping the business service operating efficiently.

The Optx Platform quickly finds problems that would not typically be detected with legacy network management systems. In one case a customer reported that the Optx Platform found more in the first 60 days than their previous platform had in the last five years – this is critical as today's businesses rely so heavily on well-performing IT services to help them meet and exceed revenue and earnings expectations.

Modern hybrid networks require modern monitoring solutions. The Optx Platform employs innovative machine learning and automation features to manage such networks and combines those capabilities to meet the needs of today's digitally transforming businesses by providing better RCA and business impact monitoring across physical and virtual networks.

A well-performing network infrastructure is critical for business success. Monitoring it with the Optx Platform provides the actionable intelligence needed to ensure that success.

About ATSG

ATSG is the leader in intelligent business service assurance. The Optx Platform delivers predictive and proactive performance and availability management across hybrid infrastructures, with a focus on real-time communications use-cases. It is available as a standalone solution or as the engine behind ATSG's managed service offerings

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