

# NETSCOUT Smart Edge Monitoring



Numerous, concurrent enterprise business transformations have converged, leaving many information technology (IT) teams to report feeling they have “lost control.” Atop these collective challenges are the Data Center Transformations and Hybrid Workforce Realities described in the subsections that follow.

## Data Center Transformations

The Data Center Transformation projects described below are at times rolled out concurrently, frequently involving multiple enterprise locations.

## Cloud Migrations

Private, public, hybrid, and multi-cloud services are deployed to address numerous digital transformation strategies, such as application and workload migrations. Many enterprises take advantage of multi-vendor strategies mixing AWS®, Microsoft Azure®, Google Cloud Platform®, and Oracle Cloud Infrastructure (OCI) services to reduce reliance on a single provider, improve geographic coverage for regional offices, access competitive pricing, and secure premium service level agreements (SLAs).

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*The NETSCOUT Smart Edge Monitoring solution arms today's IT teams with a solution that delivers rapid troubleshooting and faster mean-time-to-remediate issues impacting remote users, with a combination of packet monitoring and synthetic testing in a single platform.*

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## “As-a-Service” Adoption

Enterprise applications and services are moving out of the data center and onto “as-a-service” platforms, including software (SaaS), UC (UCaaS), Contact Centers (CCaaS), Desktop (DaaS), and Infrastructure (IaaS) solutions. With several of these services concurrently deployed today across many enterprises, IT teams are again relying on multi-vendor solutions to support business services required by users, with some of these same third parties responsible for delivering reliable application performance in compliance with respective SLAs.

## Data Center Migrations

Data center services are in the midst of an extended move to Co-located (Co-lo) and Carrier-Neutral Facility (CNF) environments, which offer the dual promises of cost containment and service efficiencies, but again involve migrating enterprise services from on-premises operations to trusted third-party (TTP) facilities.

## Software-Defined Network (SDN) Rollouts

Enterprise IT teams are deploying SDN solutions like virtualized Software-Defined Data Center (SDDC) network services provided by Cisco Application Centric Infrastructure SDN and VMware to take advantage of simplified management, micro-segmentation security, provisioning agility, and improved data center economics. Amid these benefits, IT teams need visibility into SDN-based virtual services to assure performance before, during, and after migration.

## Hybrid Workforce Realities

Today's hybrid workforce realities represent a second, equally important transformation that IT needs to manage. Initially established as an organizational response to stay-at-home work orders, the hybrid workforce is here to stay for reasons that include:

- **Safety** – Full on-premises workforce transitions will likely remain delayed until the healthcare impact of the pandemic subsides, with employees rotating back to corporate facilities according to controlled schedules (e.g., two weeks per month).
- **Investment** – Enterprise investments and IT efforts have focused on assuring virtual private network (VPN), virtual desktop infrastructure (VDI), and software-defined wide area (SD-WAN) services that were procured, scaled, and tuned to provide reliable business service access to remote workers. Other solutions include cloud access security brokers (CASBs),

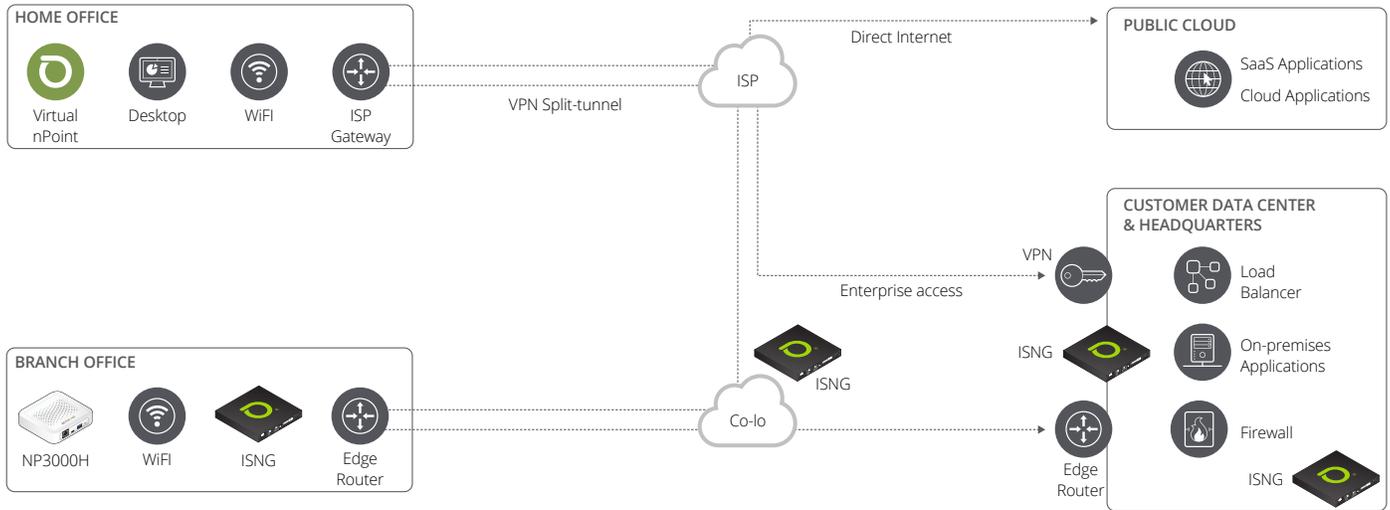


Figure 1: The NETSCOUT Smart Edge Monitoring solution provides visibility into user experience from any location, on any enterprise business service platform.

and secure access service edge (SASE) technologies. Given those investments, as well as employees shifting from corporate locations to WFH environments and vice versa, these remote business services will require continued visibility, monitoring, and troubleshooting to assure reliable operations.

- **Productivity** – Remote employees may well return to their employers’ on-premises facilities, but the home offices and anytime/anywhere work habits developed during the pandemic are here to stay.
- **Economy** – With more employees in WFH environments, many businesses are re-evaluating their corporate real estate footprints.

These collective challenges have left IT operations resources with a sense they need to be “everywhere at once” to assure user experience and service quality.

### Our Approach

The NETSCOUT® Smart Edge Monitoring solution expands the scope of visibility into user experience and service delivery critically needed by IT operations to monitor their transformed enterprise environments. In providing smart visibility “across any service, any platform, anywhere,” NETSCOUT Smart Edge Monitoring provides visualization into today’s service edge environments, specifically including:

- **Client Edge** – Wherever the user is performing their job, including: WFH environments; remote branch offices; Contact Centers; individual floors at a company headquarters; manufacturing factories and plants; hospitals and medical buildings; and warehouses and distribution centers.
- **Network Edge** – A physical or network boundary that often coincides with a change of control or ownership in an end-to-end service, including: Connection from a remote site to the Internet, WAN, or SD-WAN; peering locations in Co-los (e.g., with public cloud, Internet); VPN concentrators and/or VDI load-balancers for remote access; firewalls, DMZs, and load balancers for security; centralized SD-WAN concentrators at data centers; Co-lo’s and/or public cloud; private data center edges.
- **Data Center Service Edge** – The first Server Edge is the first application server that traffic from the client hits (first north-south traffic), and other Server/Workload edges are the subsequent tiers (east-west traffic) in the service delivery chain.
- **Cloud Service Edge** – The Cloud Service Edge factors widely “as a service” business (e.g., Microsoft Office 365, Salesforce, Workday, NetSuite) and UC&C (e.g., Cisco Webex, Microsoft Teams, Zoom, Slack) applications, as well as cloud infrastructure solutions (e.g., Microsoft Azure, Amazon Web Service, Google Cloud, Oracle Cloud Infrastructure).

### Our Solution

Leveraging NETSCOUT’s “last-mile” visibility across the full service edge environment, our Smart Edge Monitoring solution uniquely combines and extends the benefits of our market-leading nGeniusONE® Service Assurance smart analytics with our award-winning nGenius®PULSE synthetic testing solution in a single platform to provide critical insights into end-user experience.

Our Smart Edge Monitoring performance analytics take advantage of NETSCOUT’s patented Adaptive Service Intelligence® (ASI) technology in both InfiniStreamNG® and virtual vSTREAM™ packet-based data sources, as well as nGeniusPULSE nPoint synthetic test sensors for key metrics. nPoint sensors deployed at the client edge in work-from-home (WFH) and other remote environments can be configured to generate synthetic business transaction tests (BTTs) for analysis by nGeniusONE to provide critical visibility into end-user experience. Of particular importance for WFH employees are such frequently accessed as-a-service platforms, including SaaS, UCaaS, DaaS, and IaaS. The remote workforce often directly connects to these services through the Internet, bypassing the traditional north-south traffic visibility used by IT operations for communications passing through corporate data centers (as exhibited in Figure 1).

The NETSCOUT Cloud Adaptor is an add-on module for the NETSCOUT InfiniStreamNG and vSTREAM appliances. The NETSCOUT Cloud Adaptor enables synthetic test results from nPoints to be combined with the packet-based monitoring information to create smart data needed for nGeniusONE analytics into end-user experience. Rich analysis from the integration of the passive packet data with the active test results enables detailed nGeniusONE dashboard and monitor views, reporting and contextual drill-downs to key performance indicators, session analytics, and packet-based forensics.

### Delivering Value to IT Operations

NETSCOUT Smart Edge Monitoring is a first-of-its-kind solution that merges synthetic test data with packet-based smart data derived from passive network monitoring for comprehensive analysis of end-user experience and business service performance, regardless of the respective locations of those employees or solution platforms.

In this manner, NETSCOUT Smart Edge Monitoring returns “control” to IT teams managing today’s complexity in an evolving hybrid workforce and multi-vendor business service transformation environments:

- Improve quality of end-user experience at remote locations.
- Reduce MTTR and troubleshooting complexity with streamlined triage workflows.
- Collaborate more effectively with third-party vendors with verifiable performance data that validates SLA compliance.
- Get ahead of issues before users are impacted.

### NETSCOUT Smart Edge Monitoring in Action

Our Smart Edge Monitoring approach has provided NETSCOUT customers with solutions to the service edge visibility and user-experience service delivery challenges described below.

#### Improving Healthcare Service Edge Visibility at New, Remote Medical Operations Facility

When this nationally acclaimed healthcare organization opened a new office facility on their main campus, IT Operations, Security Operations, and the newly outsourced Network Operations team quickly determined they did not have required visibility into this new service edge. That meant collective IT and NetOps resources could not visualize, monitor, or troubleshoot user experience, Epic Electronic Medical Records application performance, Microsoft Teams collaborations service quality, or business services that would be running in these new patient treatment, research, and administrative buildings. The NETSCOUT smart edge visibility approach closed those gaps, with IT operations supplementing already-deployed nGenius data sources by adding software-based ISNG appliances at the remote service edges. Adding software-based nGenius Packet Flow Switches helped IT Operations to collect, distribute, and aggregate network traffic from various links in the new buildings to the ISNG appliances, as well as other cybersecurity tools employed by SecOps. NETSCOUT smart edge visibility provided IT Operations with the means to visualize and monitor healthcare service delivery to 5,000 essential staff members (i.e., doctors, nurses, research associates, and scientists) working at these new remote locations.

#### Closing WAN Service Edge Visibility Gaps to Assure Business Continuity and Operations Redundancy

After one natural disaster came a little too close for comfort, IT leadership at this U.S. healthcare provider made the strategic decision to augment their existing business continuity preparedness by establishing a back-up location, which would also serve organization efforts to maintain compliance with regulatory standards regarding uninterrupted access to patient records. Major challenges faced IT leadership in terms of executing the required data transfers from the primary to the new DR location and subsequent daily updates (How much data needed to be replicated? How would the data be transmitted? What is the best way to back it all up without failures - e.g., dropped packets, errors, etc.?).

This NETSCOUT customer added ISNG appliances at the WAN edge of their existing data centers, which enabled IT Operations to monitor application back-ups as they were replicated to the new disaster recovery data center facility. IT executives in Data Center and Capacity Planning also added the nGenius 5100 PFS for visibility into wire traffic at the existing data centers to pass to the ISNG appliances for analysis across the WAN to the distant data center to ensure they had the necessary capacity for seamless replication of applications and patient records.

#### Assuring Manufacturing Service Delivery Across Remote Office, VPN & ISP, and Virtual Application Service Edges

Exponential growth in this manufacturer’s remote office environment prompted their centralized IT team to pursue a strategy to convert their WAN to an SD-WAN solution. This conversion involved technology from numerous vendors, including:

- VMware, providing VeloCloud SD-WAN, VMware ESXi hypervisor, vRealize Network Insight, and VeloCloud Orchestrator technology.
- Avaya, providing Voice over IP (VoIP) technology operating in many of these remote offices).
- Universal CPE (uCPE) and virtual networking functions (VNF) multi-vendor solutions

In project planning and pre-production testing activities, the IT team grew concerned about visibility blind spots in the “service edges” that would soon be part of the transitioned network. In particular, the IT team identified new service edge visibility needs across the SD-WAN environment, including at:

- Hundreds of remote offices that would soon be using new virtual platforms to support uninterrupted business network and application access, as well as VoIP technology performance for company users.
- Internet Service Provider (ISP) links and VPN gateways coming into the data center, which had become essential in assuring business continuity.
- Data Center core edges, as well as workload edges at the application server farms supporting manufacturing and business operations processes.

In providing a NETSCOUT smart edge visibility solution to meet the manufacturer's project requirements, the company deployed additional vSTREAM virtual appliances operating in VMware virtual chassis in hundreds of remote offices, bringing visibility into the VMware ESXi hypervisor, VMware VeloCloud, and VNF environment. The new vSTREAM environment also provided visibility into the business services running in these remote offices, generating smart data from virtual network traffic in real-time for use by the company's nGeniusONE performance analytics.

### Improving Financial Technology Performance With Service Edge Visibility

This company found itself balancing commitments to expand corporate operations with efforts to manage pandemic-related business service disruptions. As a result, a team was established, whose mission included improving network operations reliability.

As this new team worked to resolve emerging service performance and application-related issues as part of their mission, they frequently referred to recommended-practices guidance provided by their NETSCOUT PSS Engineer. In these collaborative troubleshooting efforts, the PSS Engineer regularly discussed how adding smart visibility in a segmented environment was a NETSCOUT-recommended best practice. This area had been established to secure primary data center operations and by adding visibility to these segments, they would succeed in closing blind spots that had surfaced across expanding network domains (i.e., service edges), including load balancers, gateways, and other critical network elements. Additionally, this area was serving as a hub for multiple services and incredible visibility around business-critical applications, where downtime meant lost revenue.

These smart edge visibility enhancements allowed Network Operations to meet their targets for reliable business application performance and reduced downtime instances.

### Leading Utility Company Improves Service Edge Visibility With NETSCOUT

Given the expanse of this Energy company's technology footprint – as well as wanting to realize business goals focused on reducing operating expenses (OpEx) and improving service quality – executive leadership had outsourced select IT operations to industry third parties, including corporate network oversight. In providing these corporate network oversight services, the third-party provider hosted business service platforms at two data center locations.

Over time, IT operations leadership saw how service edge visibility gaps in the third-party IT environment created issues in assuring utility company's corporate network operations. When an operations issue traversed to the corporate network, the third-party IT team experienced challenges and lengthy delays trying to identify root cause.

Using NETSCOUT-recommended practices, the third-party IT team deployed software-based ISNG data sources to provide visibility gaps in the following domains:

- **Service edge:** Including on-premises data center edges, including core and distribution layers (i.e., down from the service edge); capturing at firewalls (i.e., close to the service edge); and three internet service providers (including QSatellite services specific to the energy industry).
- **Client edge:** Traffic from hundreds of remote business offices routed through dozens of hub sites.

Visibility enhancements in their DMZ allowed IT Operations to meet their targets for improved service reliability, reliable business application performance, and reduced downtime instances.

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*NETSCOUT Smart Edge Monitoring provides “last-mile” visibility into true end-user experience, returning IT control across all enterprise service edges.*

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**NETSCOUT**

**Corporate Headquarters**  
NETSCOUT Systems, Inc.  
Westford, MA 01886-4105  
Phone: +1 978-614-4000  
www.netscout.com

**Sales Information**  
Toll Free US: 800-309-4804  
(International numbers below)

**Product Support**  
Toll Free US: 888-357-7667  
(International numbers below)

NETSCOUT offers sales, support, and services in over 32 countries. Global addresses, and international numbers are listed on the NETSCOUT website at: [www.netscout.com/company/contact-us](http://www.netscout.com/company/contact-us)