NETSCOUT

| WHITE PAPER |

NETSCOUT Business Edge Observability Improves Employee Productivity and User Experience Quality

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Executive Summary

Digital transformation has evolved the modern-day workforce, with employees working from remote locations around the world. From branch offices to retail distribution sites, health clinics or manufacturing plants, these business edges require instrumentation with deep packet inspection to prevent gaps in visibility. To ensure a high-quality, positive user experience from these essential business edges, organizations need to continuously monitor the performance of Software as a Service (SaaS) and unified communications as a service (UCaaS) applications, third-party wide area network (WAN) services, ISP-provided services like DNS, tunnel connections like VPN, SD-WAN, and SASE, and traffic flow at the local area network.

Introduction

Remote office environments come in different forms like branch office locations, distribution centers and storefronts, research clinics, hospitals, hotels, production plants, and so many more. For example, while there are approximately 6,000 hospitals in the United States, there are over 10,000 active urgent care clinics offering convenient treatments to patients around the country today. This illustrates the need for end-through-end network and application performance visibility to power today's essential industries. It is often not economically feasible to maintain accessible, quality local IT resources everywhere they are needed. This makes it more challenging for the centralized network operations team to identify and resolve performance issues. Simplifying the troubleshooting process to efficiently identify the true root cause of issues and reduce mean time to repair (MTTR) is critical to restore quality digital experiences and maintain productivity.

Challenges

Flexible work models and distributed facilities allow employees to work from so many different environments. While this is a positive advancement, it has also significantly increased network and application performance complexity and strain on IT support resources. Remote sites with dedicated employees have increased the need for packet-based performance management solutions to reduce visibility gaps and enable rapid response for troubleshooting and problem resolution.

Historically, a common network architecture funneled remote office traffic into a central data center where monitoring instrumentation could see all the traffic to and from each site – a hub and spoke architecture. In most cases today, that design is all but obsolete because of digital transformations to SaaS, UCaaS, and public cloud. At the central data centers, instrumentation continues to see the traffic traveling through. However, a significant percentage of traffic that leaves remote offices now travels over the internet to other destinations. This creates a visibility gap in many security and performance monitoring strategies (Figure 1).

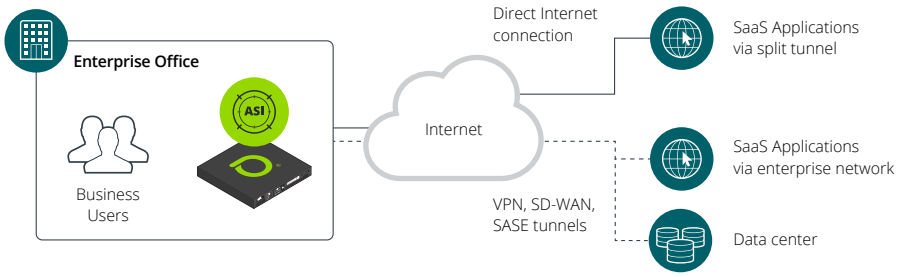

Figure 1: Remote site connections to internal data center applications and external SaaS applications.

IT organizations have new considerations to assure performance, availability, and security in all their facilities. Targeted instrumentation at the business edge can bridge critical visibility gaps and challenges in many areas to monitor remote site traffic.

When connecting to SaaS services, like Salesforce and Microsoft Office 365, or the internet in general, reliability is critical for the remote workforce. To ensure employee productivity and efficient operations from any working location, IT teams need visibility into UCaaS voice and video call quality to maintain collaboration and communication between internal employees, third parties, and customer-facing contact centers is running smoothly. In addition, the ability to swiftly troubleshoot degraded call quality, VPN, SD-WAN, LAN/WAN, or SASE tunnel connections is crucial to resolve issues that arise at any site in a timely manner.

To maintain business continuity, today's IT organizations must address each of these complex challenges when disruptions, degradations, or outages occur. Without end-through-end visibility, this becomes exponentially more difficult – especially when most of these offices are not large enough to have dedicated IT professionals on site.

Benefits of Enhanced Visibility

Developing a comprehensive visibility strategy that includes remote office SaaS, VPN, SASE, LAN, or SD-WAN monitoring is critical to support today's distributed work models. Studies consistently show negative effects to employee productivity and customer care when network availability and degradations impact the user community. Mission-critical activities like customer-facing contact centers, manufacturing, patient treatment, guest services, and customer sales require quality performance and availability from anywhere, at any time.

Assessing performance of these areas and the time to resolution when problems arise is essential to maintain business continuity. The use cases and benefits of enhanced visibility include:

- Split-tunnel connections to remote offices: monitor third party SaaS applications and enterprise network connections
- Third-party vendors: leverage evidence uncovered in troubleshooting efforts with third party vendors to expedite problem resolution and improve collaboration
- ISP connections: monitor latency, packet loss on inbound tunneled or unified communications traffic, or DNS problems for split tunnel direct internet connections
- Manned and unmanned remote sites: monitor traffic that does not leave the remote site, for example, in industrial control processes like SCADA

Availability of instrumentation at each of these points enables IT teams to reduce mean time to knowledge (MTTK). By quickly identifying true root cause of network and application performance issues, NetOps can significantly decrease MTTR. This positively impacts employee experience, customer and third-party vendor interactions, and therefore overall brand reputation. Business edge observability and deep packet inspection (DPI) at scale optimizes troubleshooting, collaboration, and overall workforce productivity and operational efficiency.

Use Cases, and Deployment Strategies, and Value

Increased use of scalable instrumentation with deep packet-level insights can significantly improve observability at remote offices. As traffic from the remote site leaves the LAN, it may traverse multiple routers, WAN providers, tunneled SD-WAN or SASE pathways, or ISP gateways without tunneling. Multiple vendors, millions of transactions and paths, and countless client users increase the need for visibility at these remote locations. Using NETSCOUT nGenius Enterprise Performance Management solutions, organizations can leverage both real-time packet-based data and synthetic testing for performance management and user experience assurance at essential business edges – from the client to the cloud and from data centers to remote offices, and beyond.

Table 1 identifies potential challenges and possible approaches to filling the observability gaps in a variety of use cases facing IT organizations today. As every networking environment is unique, there is no one perfect approach and organizations should adjust deployment scenarios to meet the needs they face for performance, importance of the locations, and budgeting guidelines in each situation.

Traffic Type	Instrumentation Location(s)	Specific Value
Split-tunnel connections from remote sites to SaaS applications and the Internet	LAN traffic ① ISP traffic without tunneling ②	Assess user experience quality for employees at remote site
Remote site traffic flowing to and from the ISP link	ISP traffic without tunneling ②	Quickly identify ISP issues like DNS problems and high latency to improve capacity planning
Inbound voice and video traffic from UCaaS technology	LAN traffic ① ISP traffic without tunneling ②	Analyze real-time packet loss and latency affecting inbound voice and video quality (MOS)
Inbound VPN, SD-WAN or SASE tunneled traffic	Tunneled traffic ③	Pinpoint true root cause of packet loss
LAN monitoring: subnet to subnet	LAN traffic ①	Determine source of LAN bandwidth issues and local application and process problems
WAN monitoring: third parties	WAN traffic ③	Examine packets as they travel over WAN physical segments and third-party networks, systems, or infrastructures

Table 1: Strategies to address remote site observability gaps. Visibility points in table match instrumentation in Figure 2.

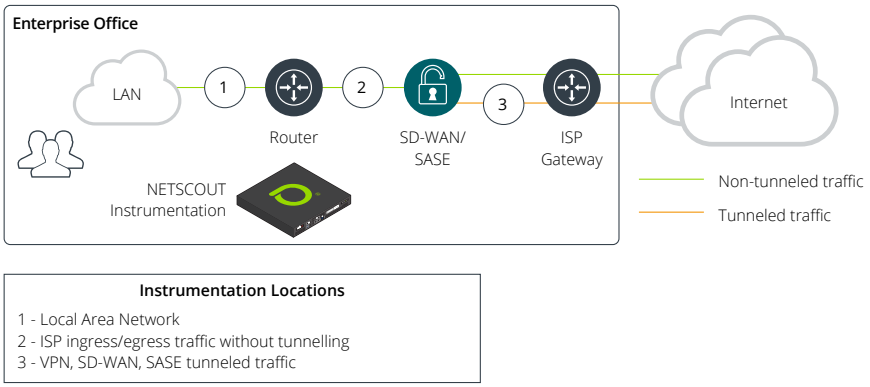

Figure 2: Locations for instrumentation as traffic travels from the LAN to the Internet, passing through the router and ISP-provided services like DNS without tunneling, and SD-WAN or SASE with tunneled traffic.

Modern technology and digital transformation have allowed businesses to support operations in remote sites across the globe. Using nGeniusONE and InfiniStreamNG appliances, organizations can increase visibility by strategically leveraging instrumentation at remote locations. NETSCOUT's patented Adaptive Service Intelligence (ASI) technology and continuous monitoring capabilities enable IT teams to reduce MTTK and pinpoint the true root cause of disruptions and slowdowns to improve troubleshooting times. With NETSCOUT solutions, organizations can measure the quality of traffic, health and bandwidth of connections, performance of SaaS and UCaaS technology, and quality of ethernet and Wi-Fi connections to ensure that operations are smooth and user experience is optimized so that employees can do their jobs productively from anywhere.

Gap Analysis Self-Audit

Remote site performance monitoring presents challenges and complexity for organizations supporting dispersed offices with a limited number of centrally located IT personnel. End-through-end observability to support the workforce at essential business edges brings forth performance, availability, and security challenges across widespread infrastructures. To assure quality user experiences and reliable connectivity and performance from anywhere, anytime, there are some key critical questions to consider:

1. How many remote offices does your organization have? Describe what kind of sites they are, and what makes them unique.
2. What kind of mission-critical applications and services are supported from remote site locations?
3. Describe the impact of downtime, outages, or quality issues at various remote sites your organization maintains. How can this impact be quantified and affect the bottom line?
4. If there are split tunnel connections from your organization's remote sites, are you routing to third-party SaaS applications as well? Describe the flow of traffic and the significance of its inspection.
5. Tell us about any issues with your organization's ISP, for example: latency, packet loss on inbound of unified communications traffic, bandwidth bottlenecks, or DNS issues for split-tunnel direct internet connections traffic.
6. How do mission-critical UC applications at remote offices affect your organization or your employees in mission-critical or customer-facing roles?
7. Walk us through any mission-critical services your organization has that involve traffic that will not leave manned or unmanned remote sites, such as manufacturing applications used within a factory or applications used within distribution centers.

Case Study

NETSCOUT nGenius Enterprise Performance Management solutions have helped industry leaders improve business edge observability, reduce MTTR, and improve employee productivity.

One noteworthy organization leveraging NETSCOUT solutions supports thousands of employees and millions of customers from over one hundred geographically distributed offices. To provide quick and convenient care central to their business, end-through-end observability is essential to monitor VPN services, data centers, and SaaS applications. Furthermore, network and application visibility were critical to their migration initiative to move WAN services to SD-WAN. Read on to learn more about how this organization has reduced troubleshooting time and MTTR to improve employee productivity with quick restoration of network and application performance.

Conclusion

The innovative nGenius Enterprise Performance Management solution helps IT organizations better monitor, analyze, track and trend packet-level information to reduce MTTR. Using continuous network and application performance monitoring, organizations can eliminate gaps in business edge observability and provide the quality experiences and reliable availability needed to maintain employee productivity. NETSCOUT's Visibility Without Borders platform approach reduces complexity and addresses the gaps that find their way into any-well planned visibility strategy. Empower your workforce and monitor business edges efficiently with NETSCOUT solutions!

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

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