

# Assuring Performance and User Experience Over VPNs With nGeniusONE Visibility and Troubleshooting

Ensuring remote access for work-from-home employees brought virtual private network (VPN) performance into focus at the executive level.

VPN availability and performance are now the keys to sustaining business operations. The combination of remote business service access and high-quality user experience is now directly connected to the health of the business, regardless of the industry sector being served. As a result, the VPN Use Cases described herein apply to a wide range of commercial and government organizations.

## Issues

Regardless of the VPN issue being encountered by the IT team – performance evaluation/analysis, proactive management, and disruptions/delays/slowdowns avoidance – the common denominator is lack of visibility into the expanded remote network and the business services traversing it.

Early on, organizations initially faced the sudden enormity of a VPN transitioning from fewer than 1,000 users to 10,000 or more – in some cases, literally overnight. As a result, many IT teams needed to manage some common issues related to this growth (e.g., unavailability, VPN capacity, and Internet Access bandwidth), but they often lacked the NETSCOUT® visibility necessary for resolution. While many organizations have solved initial VPN bandwidth concerns, remote service delivery and user experience are still at issue, with increased IT challenges associated with addition of new business services, such as:

- Zoom Conference Rooms being spun up to handle teleconference volumes
- Growing adoption of Microsoft Teams platforms
- Diversification of the UC platforms used for internal voice, video, and collaboration support

Others have struggled with performance issues reported by end users that range from blocked log-ins for some services, to slowness in some applications, to poor quality video conferences, to dropped VoIP calls. The common denominator here: all require visibility for successful troubleshooting.

## Impact

The availability and performance of VPN networks and remote business services are keys to the success of employees working from home. Business success now depends on assuring the quality of user experience. Employees working from home expect as good an experience as those working in their offices. Poor performance is a productivity killer that can consume part of a day for one remote employee, for instance. A log-in problem for one application that impacts a large user community is just one example of an issue that can cause severe user-experience slowdowns in accessing a key business service.

If the performance challenge impacts a group of partners (e.g., sales agents for an insurance company, or customer service reps that are speaking with customers) and business application access is impacted as a result, there may be financial and /or reputational issues relating to VPN performance.

## Troubleshooting and Mitigating VPN Performance & Remote User Experience Issues

In the examples that follow, common VPN and Remote User Experience issues are identified, along with descriptions of nGeniusONE® analytics and workflows designed to help resolve these performance challenges.

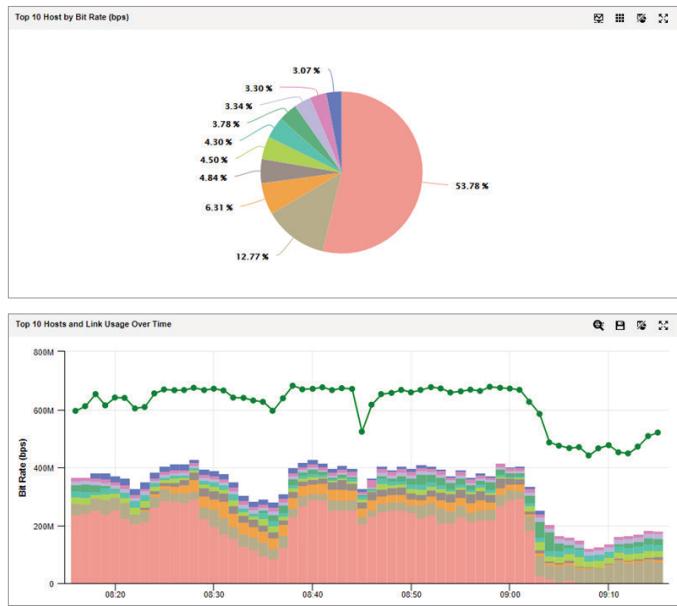
Troubleshooting capabilities in the nGeniusONE Service Assurance platform enable IT organizations to address the following types of situations with VPN operation and remote users:

- VPN Utilization Analysis & Reporting – for Executives and IT teams
- VPN Usage & UC Performance
- Application Monitoring & Analysis
- Diagnosing source of issues – VPN vs. application
- Pre-deployment impact analysis

### Challenge: Providing Executive-Level Visibility Into Regional VPN Consumption

Global businesses face additionally complex challenges in managing VPN bandwidth and user experience across diverse, multi-continent service delivery environments. In addition to Service Dashboard and Grid views, nGeniusONE Traffic Monitors can be used to address executive leadership requests for straightforward analysis of VPN resource consumption across the business.

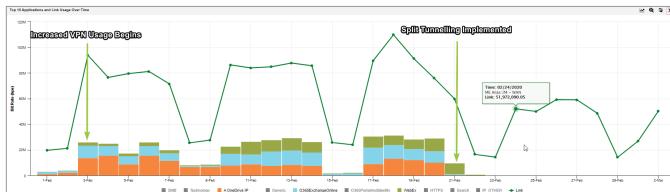
In designing the best reports for executive and/or IT organizations with varied goals and objectives, nGeniusONE offers flexibility in timeframes (e.g., daily, weekly, or monthly views) and time intervals (e.g., hourly or daily). Additionally, report information can be specified for overall traffic volume per link, activity per VPN communities, specific application usage, and even top talkers or top conversations. This information is customizable in different dashboards, reports, or nGeniusONE Grid views, depending on the combination of interdependent information the organization deems important for collective viewing and analysis.



**Figure 1: nGeniusONE Traffic Monitoring settings enable IT to set regional thresholds for performance and reporting, providing leadership with a window into user experience during high-value events, like company all-hands meetings running over VPN resources.**

In terms of mitigation, knowledge is indeed power. IT staff can use the information found in nGeniusONE real-time and over-time dashboards, workspaces, reports, and grids to make decisions on several issues:

- Understanding patterns of traffic and how applications use those resources to ensure adequate bandwidth and capacity. Emerging issues will prompt IT decision-making in terms of maintaining current capacity, off-loading traffic, and/or increasing capacity.
- If non-critical traffic is consuming bandwidth at peak times (e.g., print functions), those workloads can instead be scheduled for "off hours" processing.
- If "chatty" applications are going through the VPN, and exchanges between the employee and the application feel much longer than when end-users in the office access the service over the corporate network, the IT department may recommend the use of a virtual desktop infrastructure (VDI) solution (e.g., Citrix) for that application.
- Cloud services going through the internet and VPN resources (e.g., SaaS apps like SalesForce.com, Zoom, Office 365, and Microsoft Teams), which, to save bandwidth and capacity, may bypass the data center if the company chooses to use split tunneling.
- For non-business traffic going through the internet and VPN resources (e.g., streaming media or on-line gaming), the company may choose to implement split tunneling. Alternately, if the company policy does not allow split tunneling, IT may implement policies for non-business use or block the traffic entirely.



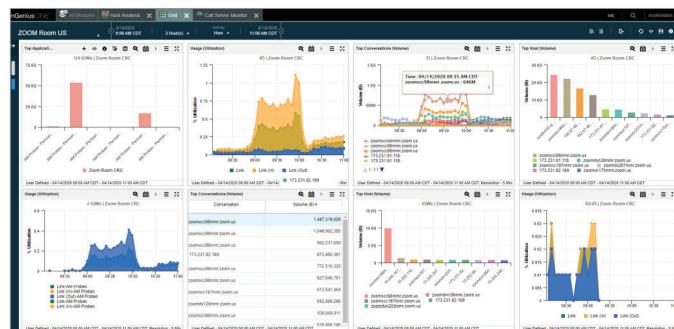
**Figure 2: nGeniusONE analysis, showing bandwidth improvements made by split-tunneling VPN configuration change in all-in-one before-and-after view.**

### Challenge: Visibility Into Expanded VPN Usage, Monitoring UC Performance

Companies that had formerly emphasized on-premises workforces are dually challenged with transitions involving thousands of employees and IT environments increasingly dependent on multi-vendor unified communications environments.

nGeniusONE Service Dashboard views customized for remote delivery environments can show both VPN performance and health, while providing a real-time snapshot across the UC environment, including how non-business traffic can consume bandwidth. Many organizations can make better-informed decisions about adopting configuration changes that quickly improve remote delivery, such as moving to VPN split tunneling that routes internet traffic to remote users' internet service providers (ISPs) and reduces the load on the corporate network.

In complementing Service Dashboard performance snapshots, nGeniusONE Grid views can offer expanded coverage of Microsoft Teams and Zoom Conferencing environments whose cloud-based teleconferencing performance is now being used in many enterprise environments, with organizations endorsing greater team collaboration with increased use/adoption of cloud technologies, while still expecting/demanding quality experience.

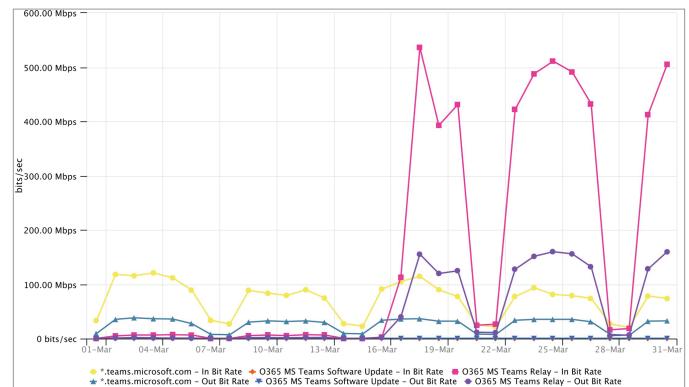


**Figure 3: nGeniusONE Grid provides views into, and analysis of cloud-based Zoom Conference Rooms, showing when formative bandwidth consumption changes could soon impact user experience.**

### Challenge: Monitoring Microsoft Teams and Office 365 in Multi-VPN Environment Running Across Multiple Co-Lo's

For those IT teams tasked with visibility across multiple Co-lo's and a multi-vendor VPN platform mix, there is increased need for multi-cloud visibility and vendor-agnostic analysis to help differentiate a bandwidth issue from a business service anomaly at one of the Co-lo's

nGeniusONE provides essential views into remote service performance before, during, and after service migrations, and that can be used to monitor real-time performance and user experience.



**Figure 4: nGeniusONE before-and-after reporting can show how Microsoft Office 365 and Microsoft Teams business services are adversely impacted by VPN bandwidth consumption. In this case, the nGeniusONE Reports can inform IT teams about necessary bandwidth upgrades.**

### Challenge: Differentiating VPN Performance from Business Application Issues

With CapEx and OpEx spikes associated with adding VPN capacity to handle remote employee traffic, company executives rightfully are tasking IT teams with close monitoring of how well business services are performing as they traverse this expanded remote delivery environment. While nGeniusONE Service Dashboard and reporting leverage NETSCOUT visibility to provide the intended outcome of validating VPN performance, nGeniusONE's single-pane views into the multi-layer service delivery network can be used to identify the root cause of the actual service anomaly and quickly troubleshoot and resolve those problems to assure high-quality user experience.

When enterprises do not employ VPN split tunneling, the full workload of essential applications and less time-sensitive business services consume bandwidth side-by-side, rather than non-business traffic routed over ISPs as a core benefit of split tunneling. Using other nGeniusONE reporting and troubleshooting workflow features, IT can identify and quickly resolve other delivery issues occurring over the VPN. For example, nGeniusONE Application Reporting can be used to identify failed connections as the root cause, with subsequent troubleshooting identifying an issue associated with operating system patches being pushed from manufacturers down the VPN.

## Challenge: Pre-Deployment Impact Analysis

With service delivery moving from the office to the home, there may be several different situations requiring the IT organization to evaluate how the enterprise can support a request to handle a particular event or service. For instance, organizations may need to deliver essential employee communications over third-party UC teleconferencing and streaming services.

In wanting to avoid performance anomalies that could impair voice and video quality of these broadcasts, nGeniusONE can be used to evaluate the impact of offering a high-definition executive video message over the corporate environment to determine if it would lead to overconsumption of organizational VPN bandwidth. Based on the results, the organization may move forward with the plan or host the video on a third-party platform to maintain quality performance of both regular business services and the corporate video.

## Use Case Conclusion

NETSCOUT nGeniusONE analytics and visibility can offer IT teams the means to address multiple service delivery and user experience issues during this remote workforce era. In this manner, NETSCOUT can quickly inform IT leadership of looming VPN performance, UC application, or multi-cloud platform issues that could adversely impact user experience and, by extension, business success.

The intuitive workflows described in this Use Case are familiar to IT teams, with easily configured nGeniusONE Service Dashboard, Monitoring, and Reporting functionality suitable for any-sized remote delivery network.



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