



# How to Assure Network Readiness with a Network Performance Management Platform

LiveAction eBook

LiveAction®



# Table of Contents

- Executive Summary.....3
- The Challenges of an Evolving Network .....3
- NPM Solutions are Essential to Validating Network Readiness .....4
  - Validate Readiness for Existing and New Applications .....4
  - Ensure Ongoing Readiness with Optimized Day 2 Operations.....4
- Converged VoIP and Video Readiness .....5
  - Pre-Rollout Network Readiness for VoIP and Video.....5
  - Day 2 VoIP and Video Operations.....6
- SD-WAN Readiness .....7
  - Pre-Rollout SD-WAN Readiness .....7
  - Day Two SD-WAN Operations .....8
- Network Inventory Readiness Day In, Day Out .....9
  - Flexible Inventory Dashboard .....9
  - Topology Mapping .....10
- The Network Readiness Mission .....11



# Executive Summary

This eBook explores how network engineering and operations professionals can use network performance management platforms to ensure that enterprise networks are capable of supporting new digital services and future business requirements.

## The Challenges of an Evolving Network

A poorly maintained network can impact business agility. By continuously monitoring the network for performance degradation and increased capacity requirements, network management teams are able to ensure the network will support the future needs of the business.

Network teams must optimize infrastructure for the applications that are traversing the network. However, due to the growing complexity and demands of the business, network teams are struggling to keep up.





# NPM Solutions are Essential to Validating Network Readiness

Digital services live and die based on the corporate network's ability to support them. Network architects and engineers must be able to validate that the network is ready for any new technology initiative. To assure network readiness, the network team will need end-to-end visibility.

A comprehensive network performance management (NPM) solution is essential to verifying network readiness.

A comprehensive network performance management (NPM) solution is **essential** to verifying network readiness

## Validate Readiness for Existing and New Applications

When network engineers open their NPM dashboards, they need immediate insight to validate the readiness of the network to support business operations.

- Every day, they review their networks to ensure all sites, devices, and interfaces are ready to support existing applications and services
- During new digital initiatives, they validate network readiness to support new technology

## Ensure Ongoing Readiness with Optimized Day 2 Operations

The network readiness mission doesn't stop with the initial assessment. Readiness is an ongoing mission. Network engineers must ensure that the network remains ready after changes have been implemented.

They will require an NPM solution that can help them respond to events and verify that the network remains in compliance with network requirements and policies.

This eBook will explore, through the following scenarios, how enterprises can ensure network readiness

**1**

Converged  
voiceover IP  
(VoIP and video  
rollout)

**2**

SD-WAN  
implementation

**3**

Day-to-day  
network  
inventory  
management



# 1 Converged VoIP and Video Readiness

VoIP and video applications are highly sensitive to problems with network readiness, such as jitter, packet loss, and latency. They require stable bandwidth and application prioritization.

Network engineers must verify network readiness so that VoIP and video services are usable and reliable. They must also be prepared to verify ongoing readiness of the network in support of Day 2 operations.



## Pre-Rollout Network Readiness for VoIP and Video

### Traffic Identification

Network engineers must verify that the network knows how to identify VoIP and video traffic on the network. They need an NPM solution that can filter and display traffic by application type. Custom application definitions will allow engineers to tag traffic as voice and video if the solution doesn't do this automatically by using standards like NBAR, Procera, and QOSMOS.

When voice and video traffic are identified, engineers can next investigate how the network treats this traffic.

### DSCP Validation

Engineers can use the network's traffic identification capabilities to isolate VoIP and video traffic. Next, they can verify that this traffic is receiving the proper bandwidth prioritization by the network. NPM solutions can verify this prioritization by auditing Differentiated Service Code Point (DSCP) values assigned to this real-time application traffic as it traverses the network. Network infrastructure uses standard DSCP values to apply quality of service (QoS) settings, which determine bandwidth priority.

If there is traffic that has the wrong DSCP value, network engineers can drill down with their NPM solutions to find the point on the network where the DSCP value changed. Flow path analysis will reveal the device that introduced the error. Then, network engineers can reconfigure that device, ensuring that voice and video traffic will receive the right QoS prioritization across the network.

### Network engineers

must verify that the network knows how to identify VoIP and video traffic



## Optimize Alerting

An NPM dashboard should have an alert summary page that can be configured to highlight voice and video alerts. Network engineers should use this feature to make VoIP and video alerts easy to find. When alerts appear, they can click into the alerts to find reports on DSCP values to uncover any improper DSCP values missed by the initial validation process.

## Utilization Reporting

Network engineers should review an NPM solution's utilization report to identify top applications by bandwidth consumption. This will allow them to understand how each application is consuming bandwidth, particularly VoIP and video. Understanding how much overall bandwidth these real-time apps will need allows an engineer to right-size the voice and video queue in QoS and ensure there is enough bandwidth reserved for overall real-time application traffic.

## Day 2 VoIP and Video Operations

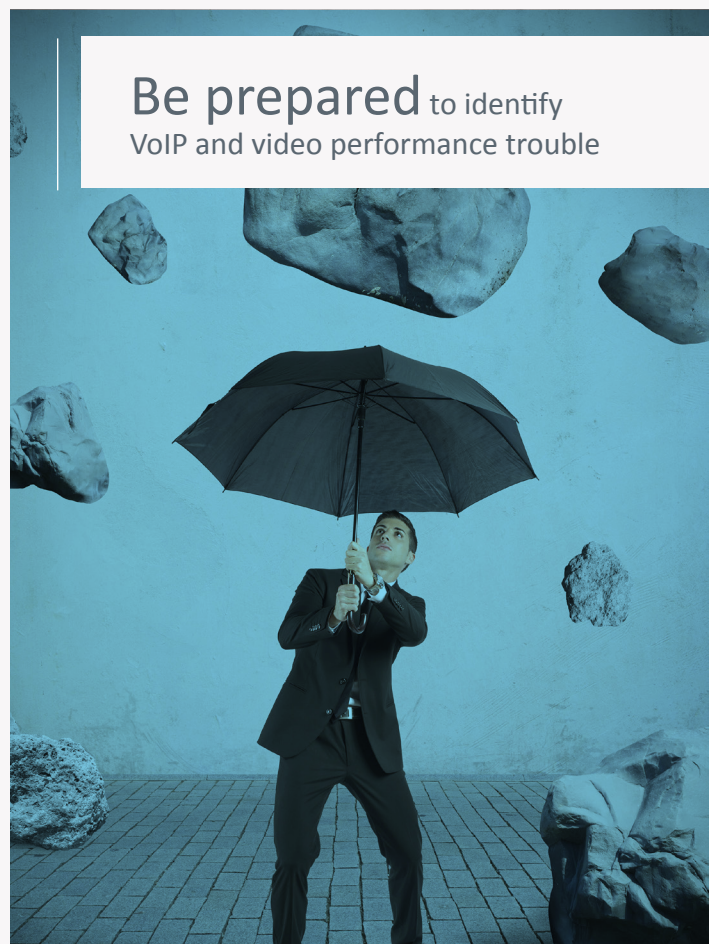
Network operations teams can maintain ongoing network readiness by finding and resolving any real-time application traffic issues quickly. They must be prepared to identify VoIP and video performance trouble with their NPM solutions and be ready to drill down into relevant reports to maintain readiness.

### Configure Dashboard Widgets that Present VoIP and Video Reports

These reports should reveal performance of VoIP and video traffic and sites where this traffic is tagged as a best effort, rather than a high priority. Network engineers should also add a dashboard widget that reveals any voice traffic queues that are experiencing packet drops, which is an indicator of poor voice quality.

### Stretch Goal: AIOps Technology

Network engineers should look for NPM solutions with features based on artificial intelligence for IT operations (AIOps), which can learn baselines for VoIP and video traffic and detect and report on anomalies. This can accelerate problem detection and simplify root-cause analysis of problems.





## 2 SD-WAN Readiness

Software-defined WAN (SD-WAN) adds an infrastructure overlay to the legacy WAN. This overlay abstracts the network underlay, including MPLS services, internet connective, and 5G mobility services.

SD-WAN alters overall network topology. Many enterprises use SD-WAN to shift from a hub-and-spoke to full mesh, with any-to-any connectivity between corporate sites, data centers, and the cloud. All of these site-to-site connections become important.

### Pre-Rollout SD-WAN Readiness

#### Application Readiness Validation with IPSLA Reporting

IPSLA synthetic tests can monitor the existing performance of legacy site-to-site WAN connections. Network engineers should use IPSLA insights to design application routing policies in SD-WAN. Loss, latency, jitter, and MOS tests reveal how real-time applications are performing on the WAN. Network engineers can use these statistics to ensure that SD-WAN capacity and QoS settings are optimized for real-time applications.

#### Review Bandwidth Utilization and Overall Capacity

Network engineers should use their NPM solutions to check traffic across the legacy WAN. NPM reports should reveal insights, such as which sites need more bandwidth, which service providers are missing SLAs, and which applications are consuming significant bandwidth.

With this insight, network engineers can set thresholds and run through scenarios with historical data stored by the NPM solution. They can use this capability to identify issues, including QoS tiers that are dropping traffic. From here, network engineers can identify applications that need better QoS support and build a plan for configuring QoS in the new SD-WAN solution.

Network engineers can also use these insights to identify the sites that could best prove the value of SD-WAN during a proof-of-concept cycle. For instance, they can identify sites where service provider utilization is high or performance is spotty. Engineers can monitor how supplementing constrained MPLS connectivity with high-bandwidth ISP connections can boost overall performance by leveraging the bandwidth aggregation capabilities of SD-WAN.

(SD-WAN) adds an infrastructure overlay to the legacy WAN. This overlay abstracts the network underlay.



## Identify and Understand WAN Applications

SD-WAN investments target application performance optimization. Network engineers should be ready to identify the applications that are traversing the legacy WAN. An NPM tool can baseline utilization and performance by collecting NetFlow and IPFIX records, IPSLA tests, and other relevant telemetry. They can explore this data to gain an understanding of which applications are heavily used and what their typical bandwidth requirements are. These measurements can guide the design of application routing policies in SD-WAN.

## Stretch Goal: AIOps Technology

AIOps technology can baseline utilization across the WAN by a variety of factors, such as application type and site. Then, it can use predictive analytics to highlight which sites will require more capacity in the future.

## Day Two SD-WAN Operations

With the right NPM solution, network engineers can provide ongoing validation that the SD-WAN is ready to serve the business day to day.

**Network engineers**  
can provide ongoing validation that the SD-WAN is ready to serve the business.

## Enterprise Visibility

Network engineers will require an NPM dashboard that can present a global view of application flows and utilization spikes. It should also provide reports on sites, highlighting issues that can impact SD-WAN readiness. There should also be service provider reports that can surface brownouts that SD-WAN service provider failover might hide and cross-correlate application performance with service provider underlays.

## Path Analysis

SD-WAN overlays can exponentially increase the number of critical paths on the network via site-to-site tunnels. Visual path analysis of the legacy network and the SD-WAN overlay will be critical. This visibility can allow network engineers to verify policy changes across the network, spot site-to-site network issues, and identify routing changes that add latency or other problems to network paths.

## Capacity Planning

NPM solutions should include reports that identify where network engineers might need to increase bandwidth. They should be able to use these NPM reports to understand which applications are consuming too much bandwidth. They should also set utilization thresholds to spot any other trends that emerge on the newly transformed network.



3

Network readiness is about more than rolling out a new application or implementing a new network technology. It's also about total awareness of the network's overall ability to support the business. At the start of every shift, a network engineer needs to know if the network is ready to support the business. Engineers will log into their NPM platform to validate this readiness.

# Flexible Inventory Dashboard

Engineers need a dashboard interface with flexibility so they can look at the network the way they need to.

## The Dashboard Should Reveal Critical Inventory Alerts

An engineer will need a logical view of network assets and the alerts associated with them so that he can answer critical questions, such as:

- What devices are up and down?
- What interfaces are up and down?
- What sites are up and down?

## Drilldown Workflow from Dashboard to Ansys

When the dashboard reveals problematic inventory, engineers should be able to click through for more insight. If an interface is down, the engineer should be able to click through to the device details to see which applications are traversing the interface and how essential they are to the business. There should also be information at this level on what alerts and statistics are available to understand the problem.

## Searchability

Engineers know their networks well, but sometimes the tools they use get in the way. A good NPM solution should allow them to find what they need immediately. Searchability in a dashboard is critical. Engineers should be able to search by region, by site, by application, by device. If they know that they need to search for it, the tool should allow them to find it. Only then can the engineer dive into the results to understand the readiness of the network.

An NPM solution should allow an engineer to reconfigure dashboards based on search results that are most important to him, making sure the most relevant insights are readily visible to engineers.

**At the start** of every shift, a network engineer needs to know if the network is ready to support the business.



# Topology Mapping

Geographic and logical maps are essential to visualizing network readiness. These graphical capabilities allow network engineers to understand how the physical components of the business and the logical components of the network fit together. Engineers can quickly see dependencies and manage events.

## Geographic View

Geographic mapping will show an engineer all the sites associated with the business in one place. IT should be infused with data so that engineers can see which sites are performing well and which ones are having issues. This allows an engineer to understand whether a problem is local or global, affecting one part of the business or all parts of the business, which will guide prioritization of alerts.

Engineers should be able to click into the map and see more details on the nature of problems, with data on critical applications used at those sites and information on QoS readiness.

## Logical View

A logical map provides a view that represents the network engineer's mental model of the network on one screen. This allows them to understand how individual network devices are connected and the state of traffic flowing between devices. Overall, engineers can quickly understand how these logical connections are affecting business.





# The Network Readiness Mission

Whether deploying new technology or managing existing technology, network engineers must assure that the network is ready to support the business. This requires end-to-end visibility with an NPM solution.

The NPM solution must be able to validate readiness for new solutions by reviewing existing conditions, projecting new requirements, and validating that the network remains in compliance with requirements after a rollout.

The NPM solution must also be configured so that network engineers can review inventories every day to confirm that the network is ready to serve the business. Workflows must be in place so that engineers can resolve any issues they discover. Let these requirements guide employees as they adopt an NPM solution to support their company's network readiness mission.



## About LiveAction

LiveAction provides end-to-end visibility of network and application performance from a single pane of glass. This gives enterprises confidence that the network is meeting business objectives, offers IT administrators full visibility for better decision making, and reduces the overall cost of operations. By unifying and simplifying the collection, correlation and presentation of application and network data, LiveAction empowers network professionals to proactively and quickly identify, troubleshoot and resolve issues across increasingly large and complex networks. To learn more and see how LiveAction delivers unmatched network visibility, visit [www.liveaction.com](http://www.liveaction.com).