

LiveAction Visualization and Management for Cisco IWAN

Overview

Cisco® Intelligent WAN (IWAN) delivers an uncompromised user experience over any connection, whether Multiprotocol Label Switching (MPLS) or the Internet. By unifying the logical infrastructure of multiple connections that span diverse carriers and link types, Cisco IWAN gives customers more net bandwidth through the same physical connections. IWAN protects performance-sensitive applications from brownouts and blackouts, provides secure and reliable active-active load balancing for applications, and improves application performance, while reducing WAN costs. The savings from IWAN not only pay for the branch-office infrastructure investments but can also free resources for new, innovative business services.

LiveAction® software simplifies the network for better digital experiences by providing continuous insight, service assurance, and control of enterprise networks. Its award-winning network performance analytics platform, LiveNX, offers a deep understanding of networks and applies situational awareness to accelerate employee productivity and boost customer satisfaction. LiveNX enables easy troubleshooting with Quality-of-Service (QoS) control and WAN functionality developed through engineering partnerships with Cisco Systems.

LiveAction is a Cisco recommended management platform for IWAN. It provides GUI-based management and visibility for intelligent path control and application performance optimization. Specifically, LiveAction offers the following IWAN management functions:

- Performance Routing (PfR) path control visualization, reporting, and configuration
- Application Visibility and Control (AVC) visualization, reporting, and configuration
- QoS monitoring and policy configuration, including AVC's application-aware QoS
- PfR dashboard and real-time network health and status

PfR Path Control Visualization, Reporting, and Configuration

LiveNX visualizes traffic paths and performance before and after any path changes are made by PfR, so customers can better realize the IWAN Return On Investment (ROI). In particular, when PfR makes a path change to protect applications because of an Out-Of-Policy (OOP) condition, LiveNX renders the end-to-end path changes graphically from the branch office through the service provider(s) to the data center(s) where the applications reside, providing more meaningful and actionable information than the standard PfR Command-Line Interface (CLI) outputs. Furthermore, LiveNX shows what OOP condition (for example, delay, loss, or jitter) triggered the path changes and provides specific reporting on those triggers. LiveNX also displays the application traffic associated with those path changes.

To see how LiveNX's unique PfRv3 and IWAN capabilities operate up close, [watch this 12-minute demonstration](#).

Application Optimization

Intelligent path control not only lowers WAN costs and makes full use of all WAN bandwidth, but also increases application availability and improves application performance by routing around carrier black holes and brownouts. In addition, it selects the per-application best path based on real-time measurements of delay, loss, and jitter. Cisco IWAN includes AVC statistics to track and report application flows and performance. With AVC, the flows to an application server can be measured from end to end, giving the network a higher level of application awareness. Using LiveNX, you can move directly from the high network visibility provided by AVC to remedy the issues AVC identifies in monitored traffic classes and flows. For example, you can use LiveNX to identify and analyze unwanted applications on the network that are impacting critical business traffic.

You can also take advantage of LiveNX's unique QoS configuration functions to mitigate any offending traffic by policing policy and incorporating the Cisco Network-Based Application Recognition (NBAR) classification.

LiveNX's end-to-end AVC flow visualization across the network topology can be very useful in helping to ensure that appropriate traffic markings and priorities are carried through the network and across service provider clouds. LiveNX also graphically displays response-time statistics and the breakdown of network, server, and application delays provided by AVC. In addition, LiveNX allows you to configure AVC alerts to increase the visibility of network delays or retransmission events. When these configurable thresholds are exceeded, LiveNX generates alerts, so that network administrators can be notified and take appropriate action.

LiveNX features a dashboard that provides top N application performance, as well as a series of detailed AVC reports for application performance analysis and troubleshooting. For example, when a user experiences degradation in the performance of a critical business application due to a file-sharing application using most of the WAN-edge bandwidth, LiveNX can quickly visualize the abnormal traffic pattern, troubleshoot, and resolve the performance problem that affects this user. The unique graphical LiveNX QoS configuration capabilities then allow the network administrator to adjust the QoS policy using simple point-and-click actions and apply the policy to the interface to throttle down the file-sharing traffic in a matter of minutes. What's more, the user can then validate the new QoS settings by looking at traffic flows after the changes have been made to ensure that application performance returns to normal. LiveNX also has a "revert" function to back off QoS changes at the click of a button.

QoS Monitoring and Configuration

Cisco IWAN value propositions are centered on optimizing WAN bandwidth and improving application performance. Yet these benefits need to be summarized visually to readily prove their value. With its unique end-to-end visualization capabilities, LiveNX increases the value of IWAN by helping customers see and optimize IWAN network performance more clearly and immediately.

Part of understanding and improving application performance is the ability to efficiently monitor and configure QoS. Through its QoS congestion indicator visualization and performance tracking, LiveNX provides extensive analyses and makes it easy for IT engineers to fully understand QoS behaviors on their networks. LiveNX provides proactive QoS monitoring that detects and alerts engineers to critical policy drops before end users report problems. Its real-time QoS graphical reporting at intervals as short as 10 seconds enables a quick validation of policy changes. The LiveNX push-button policy and performance audit report analyzes QoS configurations for errors and performance problems and details this information in an easy-to-navigate report.

LiveNX's graphical QoS configuration capability empowers IT engineers (of all experience levels) to create, edit, and implement highly effective QoS policies on live networks with complete ease and confidence. LiveNX has deep, built-in QoS expertise based on extensive research into the features, functions, and idiosyncrasies of Cisco devices. With LiveNX, QoS configurations can be created from the beginning or by using Cisco best-practice templates with hundreds of device-specific rules and guidelines. After QoS policies have been created, they can be deployed immediately on multiple devices or interfaces. For example, LiveNX can create and manage QoS policies on Dynamic Multipoint VPN (DMVPN) tunnel endpoints and then apply them to tunnel interfaces. Each policy can then be assigned to the desired Next Hop Resolution Protocol (NHRP) tunnel interface. Working in conjunction with AVC and NBAR2, LiveNX allows full NBAR2 QoS control on Cisco routers—both on a per-application level and at the higher group level. Thus, network engineers can take advantage of the Cisco NBAR2 grouping feature and the LiveNX QoS graphical configuration to vastly reduce the complexity and verbosity of the router configuration.

PfR Dashboard, Network Health, and Status

LiveNX provides overall PfR and network health status for IWAN management, including:

- PfR dashboard for a quick glance at how PfR performs in rerouting traffic or protecting applications
- Network discovery and network topology
- End-to-end flow visualization
- Networkwide audits of QoS policies
- Network monitoring using NetFlow, IP Flow Information Export (IPFIX), Simple Network Management Protocol (SNMP), and routing and LAN statistics
- Threshold-crossing alert processing
- Dashboard and at-a-glance color-coded status for top application performance, site performance, networking device CPU and memory usage, link usage, and interface up or down
- Top QoS conditions on interfaces, links, and Layer 2 devices: Drops and areas of congestion
- Top applications by volume, top countries where traffic is coming from or going to, etc.
- Support for multiple data center environments

Benefits of LiveNX IWAN Management

LiveNX provides the following significant benefits to customers for IWAN implementation:

- Savings in time and money
 - Provides faster IWAN deployment and troubleshooting
 - Enables easier justification of IWAN ROI
- Facilitation of IWAN adoption
 - Visually demonstrates Cisco IWAN improvements in performance and availability
 - Provides an end-to-end IWAN management solution
- Increased productivity
 - Empowers a deeper understanding of application traffic with end-to-end flow visibility
 - Finds and fixes problems faster with graphical QoS control and bulk configuration
 - Implements robust IWAN reporting
- Ease of operations
 - Offers a clear visualization of path changes
 - Provides an intuitive GUI for faster deployment, configuration, monitoring, and troubleshooting

LiveNX Specifications

LiveNX provides PfRv3 support and is built on a three-tiered architecture with clients, servers, and nodes. Nodes discover network devices, ingest flow and SNMP data, and extend configuration capabilities in a distributed environment by allowing for horizontal scaling of LiveNX. In addition, the clients and servers have been enhanced for massive scalability.

Client Application

The client application can run via web-start directly from the LiveNX web server, or it can be installed as a 64-bit client application for Windows or Mac.

Server

The LiveNX server runs on a Windows or Linux (CentOS or RedHat) Server or VM. It also has a built-in collection node and is fully usable without any additional installations.

Node

The node provides the ability to add additional collection and other capabilities and helps scale horizontally by providing additional processing. The node runs on Windows or Linux and communicates to the central LiveNX server.

Customers can choose the following LiveNX deployment scenarios:

- **Single server:** The single-server deployment of LiveNX consists of installing the server on a Windows or Linux server or VM. Since the LiveNX server has a built-in collection node, it is fully usable without any additional installations.
- **Distributed deployment:** In distributed deployments, a single server is deployed as usual, but additional nodes can be implemented and associated to the server (as described below).
- **Virtual machine:** Servers and nodes can be deployed on VM as long as the performance requirements for compute, store, and network are met.

The use and location of additional nodes are based on these three criteria:

- **Performance**
 - Offload performance to another node
- **Location**
 - Place node near devices being polled
 - Place at a branch site, so data is not polled across the WAN to the data center where the server exists
- **Security**
 - Place node in a Different Security Zone (DMZ)
 - Node(s) will initiate communication from security zone to server
 - In case of loss of communication, the server or node may reinitiate communication

For LiveNX performance and recommended hardware configurations, please refer to [LiveAction LiveNX Install Guide](#).

Ordering Information

The LiveAction IWAN management software is available on the Cisco Global Price List (GPL) as listed in Tables 1 through 3.

- LiveAction's LiveNX has the following pricing models on the Cisco GPL:
 - Perpetual license: Provides use of the license in perpetuity. Software upgrades are provided with purchase of annual maintenance.
 - Annual maintenance for perpetual license for 1 year: Provides technical support from LiveAction and access to minor and major software releases. For multiyear, 3-year, and 5-year contacts, increase the quantity of the applicable SKUs.
 - Subscription license for 1 year: Provides technical support from LiveNX and access to minor and major software releases. For multiyear, 3-year, and 5-year contacts, increase the quantity of the applicable SKUs.
- The SKU are based on the number of network devices, such as routers and switches. You can combine multiple licenses to reach the desired number of devices to be managed. For example, to manage 700 devices, you may purchase a 500-device license and two 100-device licenses.
 - Cisco routers supported.
 - Cisco 800, 1700, 1800, 1900, 2600, 2600XM, 2800, 2900, 3600, 3700, 3800, 3900, 4300, 4400, 7200, 7600, CSR 1000v, and ASR 1000 Series routers are supported by the LiveNX Flow, QoS Monitor, QoS Configure, Routing, and IP SLA modules.
 - For Cisco ASR 9000 Series and CRS-1 models, only LiveNX Flow is supported.
 - Recommended Cisco IOS® Software versions: 12.3 or higher or 15.0 or higher for use with the software (Cisco IOS XE 2.6.0 or higher for the ASR 1000 Series). Earlier Cisco IOS versions may also work but are not officially supported.
 - General-release Cisco IOS versions are recommended, although early- and limited-release versions will also work with LiveNX.
 - Cisco switches supported.
 - Cisco Catalyst® 2960, 3560, 3650, 3750, 3850, 4500, and 6500 Series Switches are supported by LiveNX LAN.
 - Cisco Catalyst 3850, 4500, and 6500 Series Switches, and Cisco Nexus® 3000, 7000, and 9000 Series Switches are supported by LiveNX Flow. Please consult the Cisco feature navigator for specific hardware requirements.
 - Limited support for the LiveNX QoS Monitor and QoS Configure modules on Layer 3-routable interfaces and VLANs, depending upon Cisco hardware capabilities.
 - No Layer 2 QoS configuration.

LiveNX Enterprise

- LiveNX Enterprise includes multinode, multiuser, unlimited historical data, and full-function features with the LiveNX Flow, QoS Monitor, QoS Configure, Routing, IP SLA, and LAN modules.
- In this configuration, the LiveNX Routing module includes Policy-Based Routing, visualization of Virtual Routing and Forwarding (VRF), routing, adjacency tables, and next-hop route tracing. The IP SLA module includes an IP SLA dashboard, GUI-based IP SLA test generation, visualization of IP SLA test status, and all IP SLA reports. The LAN module functions include Layer 2 QoS monitoring, LAN path visualization, and Spanning Tree Protocol visualization.

Table 1: LiveNX Enterprise, Perpetual License, Ordering Information

| Cisco product IDs | LiveNX Enterprise perpetual license |
|---------------------------|---|
| L-SP-LA-E-25-K9= | LiveNX Enterprise perpetual license, 25 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-50-K9= | LiveNX Enterprise perpetual license, 50 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-100-K9= | LiveNX Enterprise perpetual license, 100 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-200-K9= | LiveNX Enterprise perpetual license, 200 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-500-K9= | LiveNX Enterprise perpetual license, 500 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-1K-K9= | LiveNX Enterprise perpetual license, 1000 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-2.5K-K9= | LiveNX Enterprise perpetual license, 2500 managed devices, unlimited historical, multinode, multiuser |
| L-SP-LA-E-5K-K9= | LiveNX Enterprise perpetual license, 5000 managed devices, unlimited historical, multinode, multiuser |

Table 2: LiveNX Enterprise, Annual Maintenance, 1-Year, Ordering Information

| Cisco product IDs | LiveNX Enterprise, annual maintenance for perpetual license |
|--------------------------|---|
| M-SP-LA-E-25-K9= | LiveNX Enterprise annual maintenance, 25 managed devices, unlimited historical, multinode, multiuser |
| M-SP-LA-E-50-K9= | LiveNX Enterprise annual maintenance, 50 managed devices, unlimited historical, multinode, multiuser |
| M-SP-LA-E-100-K9= | LiveNX Enterprise annual maintenance, 100 managed devices, unlimited historical, multinode, multiuser |
| M-SP-LA-E-200-K9= | LiveNX Enterprise annual maintenance, 200 managed devices, unlimited historical, multinode, multiuser |
| M-SP-LA-E-500-K9= | LiveNX Enterprise annual maintenance, 500 managed devices, unlimited historical, multinode, multiuser |

| Cisco product IDs | LiveNX Enterprise, annual maintenance for perpetual license |
|---------------------------|--|
| M-SP-LA-E-1K-K9= | LiveNX Enterprise annual maintenance, 1000 managed devices, unlimited historical, multinode, multiuser |
| M-SP-LA-E-2.5K-K9= | LiveNX Enterprise annual maintenance, 2500 managed devices, unlimited historical, multinode, multiuser |
| M-SP-LA-E-5K-K9= | LiveNX Enterprise annual maintenance, 5000 managed devices, unlimited historical, multinode, multiuser |

Table 3: LiveNX Enterprise, Subscription License, 1 Year, Ordering Information

| Cisco product IDs | LiveNX Enterprise, subscription license |
|---------------------------|--|
| S-SP-LA-E-25-K9= | LiveNX Enterprise subscription license, 25 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-50-K9= | LiveNX Enterprise subscription license, 50 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-100-K9= | LiveNX Enterprise subscription license, 100 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-200-K9= | LiveNX Enterprise subscription license, 200 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-500-K9= | LiveNX Enterprise subscription license, 500 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-1K-K9= | LiveNX Enterprise subscription license, 1000 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-2.5K-K9= | LiveNX Enterprise subscription license, 2500 managed devices, unlimited historical, multinode, multiuser |
| S-SP-LA-E-5K-K9= | LiveNX Enterprise subscription license, 5000 managed devices, unlimited historical, multinode, multiuser |

Technical Support and Additional Information

Technical support and software updates are provided with purchase of the annual maintenance for perpetual licenses and with subscription licenses. For 24x7 support, visit the [LiveAction Software & Service Support Page](#).

For more information on Cisco IWAN and LiveAction IWAN Management, please visit the [Cisco Intelligent WAN Page](#) and the [LiveAction for Cisco IWAN Management Page](#) or send an email to iwansales@liveaction.com.

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