

Network Performance and Analytics Platform

LiveNX collects and analyzes real-time data directly from network devices providing insights to plan, diagnose, and optimize the environment to deliver application assurance for an optimal customer experience.

Overview

End-to-end Flow Visualizations Across the Network

LiveNX's patented visualization technology simplifies network operations and troubleshooting. LiveNX utilizes visual tool sets to illustrate real-time infrastructure data to provide situational awareness of the current state of the network.

Application Visibility and Troubleshooting

Gain a deep understanding of application traffic with full visibility of protocol and application type including video, voice, instant messaging, file transfer, etc. Troubleshoot applications deployed in the data center, public cloud or SaaS. Understand how your network is being used, how applications are performing, and which sanctioned or unsanctioned applications are being used.

Intuitive Graphical Interface for QoS Control

Create, edit and apply QoS polices for Cisco routers and Layer 3 switches on live networks consistently and confidently. QoS wizard and built-in templates are available to apply policies based on Cisco best practices or use the QoS GUI editor to build custom policies. LiveNX generates a QoS audit report to show QoS policies in detail, including configuration settings, performance issues, drops, and policy errors.

Software-Defined WAN Management

Utilize application and path visualizations to effectively validate WAN Return-on-Investment (ROI) for traditional MPLS, hybrid, or Software-Defined WAN (SD-WAN). When a network element makes a path change to protect the applications due to an Out-of-Policy (OOP) condition, LiveNX renders the end-to-end path changes graphically. Visualize the network and overlay paths from the branch-office, through the service provider(s) to the data center where the applications reside, for meaningful and actionable information.

LiveNX gathers real-time data from both any multi-vendor network elements as well as Cisco-specific REST APIs (DNA Center, vManage BFD (Bidirectional Forward Detection) and AppId (Application Identification) to provide accurate visual analytics.

What's New

LiveInsight Machine Learning Module

LiveInsight analyzes and evaluates large data sets to deliver proactive notification of meaningful changes or anomalies that could affect application or network performance. The "human-in-the-loop" design places the Engineer or Operations team in the driver's seat to pinpoint what is important and to direct the algorithms where to optimize and focus for further insights.

Unified SD-WAN

LiveNX extends unified network performance management across the entire lifecycle of SD-WAN migrations including-but not limited to-support for Cisco IWAN and Cisco SD-WAN featuring Viptela and Cisco Meraki.

Alert Notifications

LiveNX now highlights total alerts and criticality on the top menu bar and individual descriptions along the right side of the summary page for quick status check and prioritization for assignment and investigation.

Event-to-Alert Mapping

LiveNX generates alerts upon events matching desired criteria. By throttling notifications from raw alerts into less frequent, more meaningful information it reduces noise from flapping alerts.

Apple Fastlane Reporting

LiveNX reports on the performance of policies applied to iOS devices and apps for business users running on Cisco enterprise environments.

Integration with ServiceNow

The LiveNX REST API automates the alert-to-incident management workflow which enables faster time to resolution by the service desk team.

Flexible Deployment with Amazon Web Services (AWS) and Microsoft Azure With LiveNX deployed in public cloud environments, organizations benefit from elastic cloud computing and storage environments that enable them to reduce cost and simplify operations.

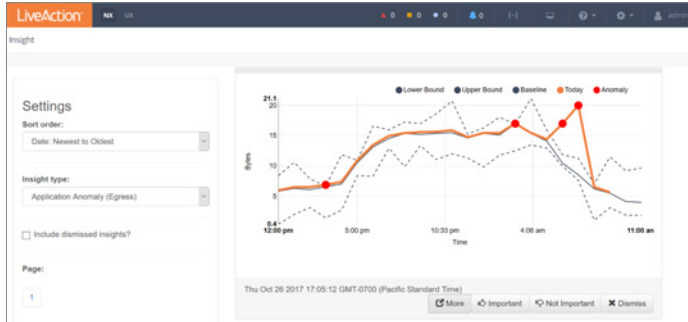
Identity Service Engine (ISE) Integration

LiveNX ISE integration delivers identity connection, authentication and query support to facilitate the exchange of contextual information with Cisco products that support pxGrid.

Key Features

LiveInsight Machine Learning Module:

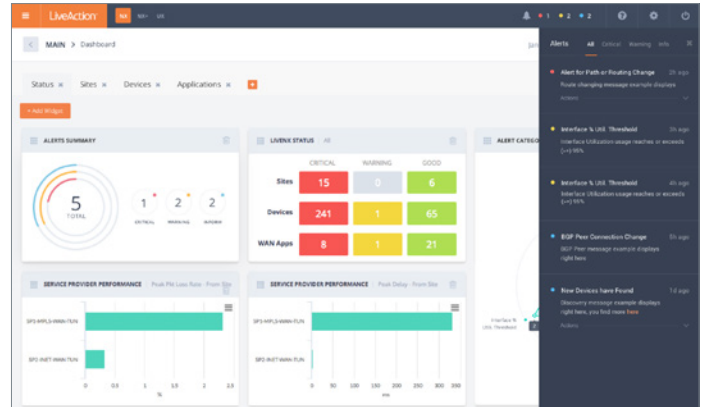
LiveInsight features “human-in-the-loop” capabilities that combine the expertise of network engineers and event-driven insights to continuously learn, automate routine tasks, and proactively notify about meaningful changes or detect anomalies that could potentially affect application or network performance.



LiveInsight

Event-to-Alert Mapping:

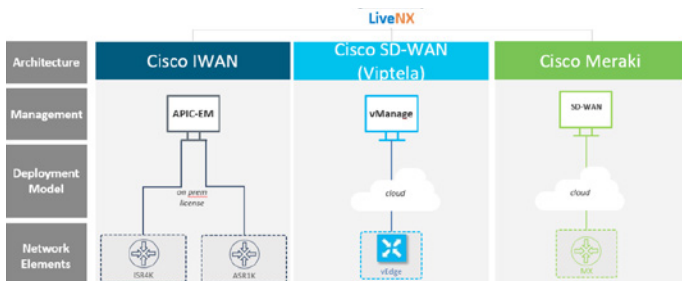
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LiveNX Event-to-Alert mapping

Unified SD-WAN:

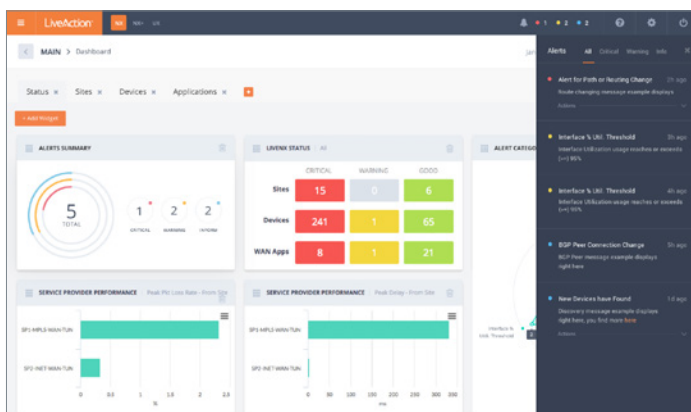
Unified network performance management across the entire lifecycle of SD-WAN migrations, including-but not limited to- support for Cisco IWAN and Cisco SD-WAN featuring Viptela and Cisco Meraki.



LiveNX – Unified SD-WAN Performance and Analytics

Alert Notifications:

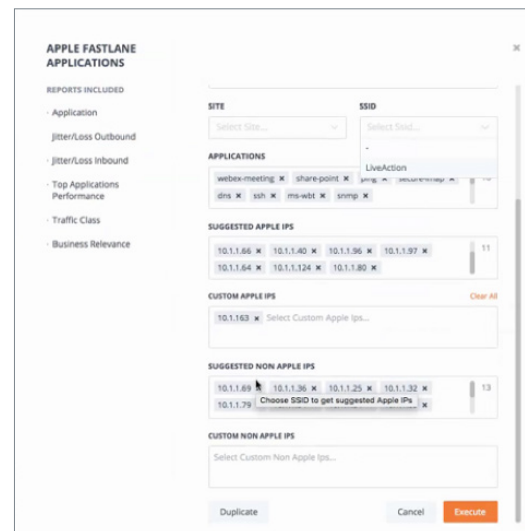
LiveNX presents the summary status of total alerts on the main page top menu and further details on the right portion of the display.



LiveNX Alert Notifications

Apple Fastlane Reporting:

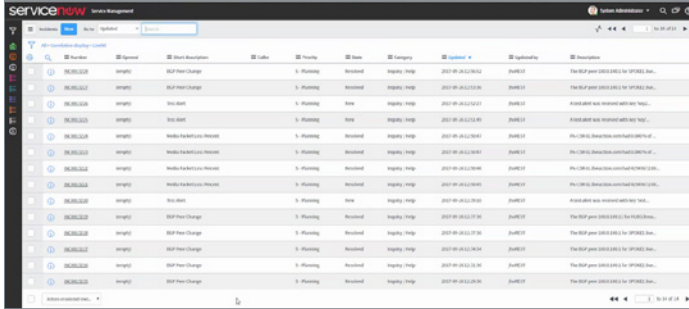
LiveNX reports on the performance of policies applied to iOS devices and apps for business users running on Cisco enterprise environments.



LiveNX – Apple Fastlane reporting

Integration with ServiceNow:

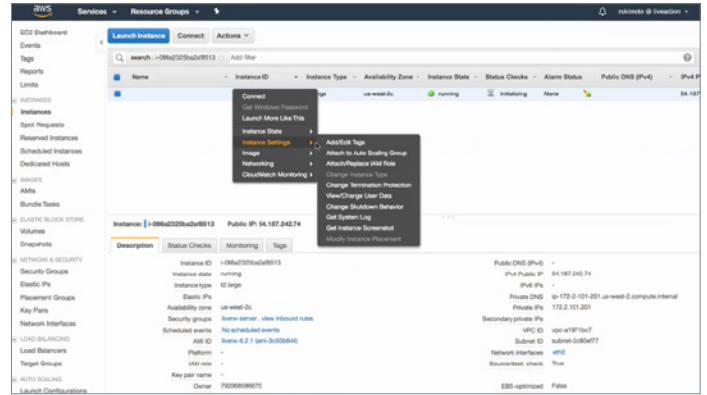
LiveNX REST API provides the means to automate the alert-to-incident creation, tracking, and reporting workflows with ServiceNow for faster time to resolution.



LiveNX to ServiceNow Alert-to-Incident Management

Flexible Deployment with Amazon Web Services (AWS) and Microsoft Azure:

With LiveNX deployed in public cloud environments, organizations benefit from elastic cloud computing and storage environments that enable them to reduce cost and simplify operations.



LiveNX – Amazon Web Services deployment

Key Capabilities

Flow Visualization for Network Troubleshooting

Visualization allows you to better understand network traffic so that you can identify trouble spots.

- Application and flow path analysis
- Multi-vendor support – NetFlow v5/v9, IPFIX, sFlow and J-Flow
- Jitter, delay, packet loss metrics for voice and video
- Application response times, round-trip time, server delay and client delay metrics
- NetFlow Secure Event Logging (NSEL)
- Wireless information including user identity
- Firewall high-speed logging
- End-system (device type, OS) and end-user information
- Integration with Network Packet Brokers
- Flow DVR for playback of historical data
- Built-in Domain Name System (DNS) name resolution
- Topology export to Visio

Software-Defined WAN Monitoring

GUI-based management for SD-WAN monitoring for path control and application performance optimization.

- Path control visualization
- SD-WAN dashboard and trending
- Pfrv3 multiple data center support
- Shows what Out-of-Policy reason triggers path change(s)
- Reports on traffic class/application associated with path

Identity Service Engine (ISE) integration

LiveNX ISE integration delivers identity connection, authentication, and query support to facilitate the exchange of contextual information with Cisco products that support pxGrid.

Cisco IWAN Support

- Pfr configuration of multiple Master Controllers
- Automatically learn semantic settings for Pfrv3 monitoring to simplify setup
- Pfrv3 multiple data center support

Cisco SD-WAN Support (Viptela)

LiveNX consolidates a unified reporting, inventory, and alert notification for Cisco IWAN and Cisco SD-WAN for:

- Device monitoring credentials, like SNMP settings
- Viptela device inventory, including vEdge routers and management devices like vManage, vBond and vSmart
- Add relevant interfaces for monitoring from each vEdge router. The most important interfaces are the WAN interfaces. Also add LAN interfaces.
- Gather network semantic information per device and interface:
 - Site association per device
 - Site geo location
 - WAN interfaces per device
 - Service Provider associated with each WAN interface. Note: Viptela refers to the service provider information as “colors”.
 - Capacity of WAN links (inbound and outbound)
 - Site IP mappings
 - Determine if a device is in the data center
 - Viptela VPN ID mapping to a VPN name. The VPN ID is synonymous to a VRF. Viptela may or may not associate VPN ID’s to names, as is the case with Cisco.
 - vManage API: BFD (Bidirectional Forward Detection), Appld and Alarms.

QoS Monitoring

Track QoS performance on a per-class basis. Monitoring and alerting of priority queue drops provides proactive notification of potential voice quality issues.

- NBAR2 application visualization
- Custom NBAR definitions
- Pre- and post-QoS graphs
- Detailed graphical display of interface and CBQoS statistics
- 95th/99th percentile, quarterly, yearly and collated reports

Alerting

LiveNX associates Events from devices (routers, switches, firewalls, etc.) to Alerts, which are generated upon meeting specific criteria, such as a threshold, and are displayed in the Operations Dashboard.

With the Event-to-Alert mapping concept, LiveNX is able to eliminate the common complaint that the number of alerts being created is too high, thereby displaying only the alerts that require immediate attention.

Alerts are categorized into three severity levels:

Critical:

The highest severity, e.g. for alerts that would cause the biggest problem to the network

Warning:

A high severity, e.g. for alerts that may indicate issues that are problematic or will become problematic

Info:

A low severity, e.g. an issue that is worth knowing about but may not be that detrimental to the network

Alerts can be configured to integrate into workflows within industry incident management systems such as ServiceNow and PagerDuty.

QoS Configuration

Create, edit, and apply QoS policies for Cisco routers and Layer 3 switches on live networks. Use the QoS wizard and built-in templates to apply policies across multiple devices based on Cisco best practices or use the QoS GUI editor to build policies.

- Full Modular QoS configuration support including WRED, CBWFQ, and Priority Queue
- Hierarchical policy creation for advanced configurations
- Custom NBAR2-based matches including high-level attributes, HTTP URL, MIME, HOST and RTP protocols
- Built-in ACL editor
- Built-in rules for QoS settings that highlight violations
- Configuration audit trail
- System-wide QoS audit
- LAN Service Policy

LAN

Visualize Spanning Tree Protocol. Provide real-time Layer 2 visualizations for networks, including trunk interface, port channels, VLAN associations and bandwidth percentages. Run Layer 2 QoS reports.

Routing

Real-time routing visualizations for Cisco networks that can identify reachability problems, routing loops, and asymmetric paths affecting traffic quality. In addition, the policy-based routing viewer/editor provides a high degree of control over traffic policy to route traffic easily and predictably over user-specified paths.

IP SLA

Cisco IOS IP SLA is easily accessible to generate and monitor synthetic network traffic to baseline network performance, test policy changes, or proactively monitor key network paths. Synthetic traffic types include data (HTTP, FTP, DNS, DHCP) and voice that can be used to measure latency, loss, jitter, and Mean Opinion Score (MOS) for VoIP. The highly interactive graphical interface delivers the functionality and flexibility of IP SLA features without the need to learn and use Cisco device command lines.

Test Types:

DHCP, DNS, ICMP Echo, FTP, HTTP, Jitter, UDP Echo, Video Operations

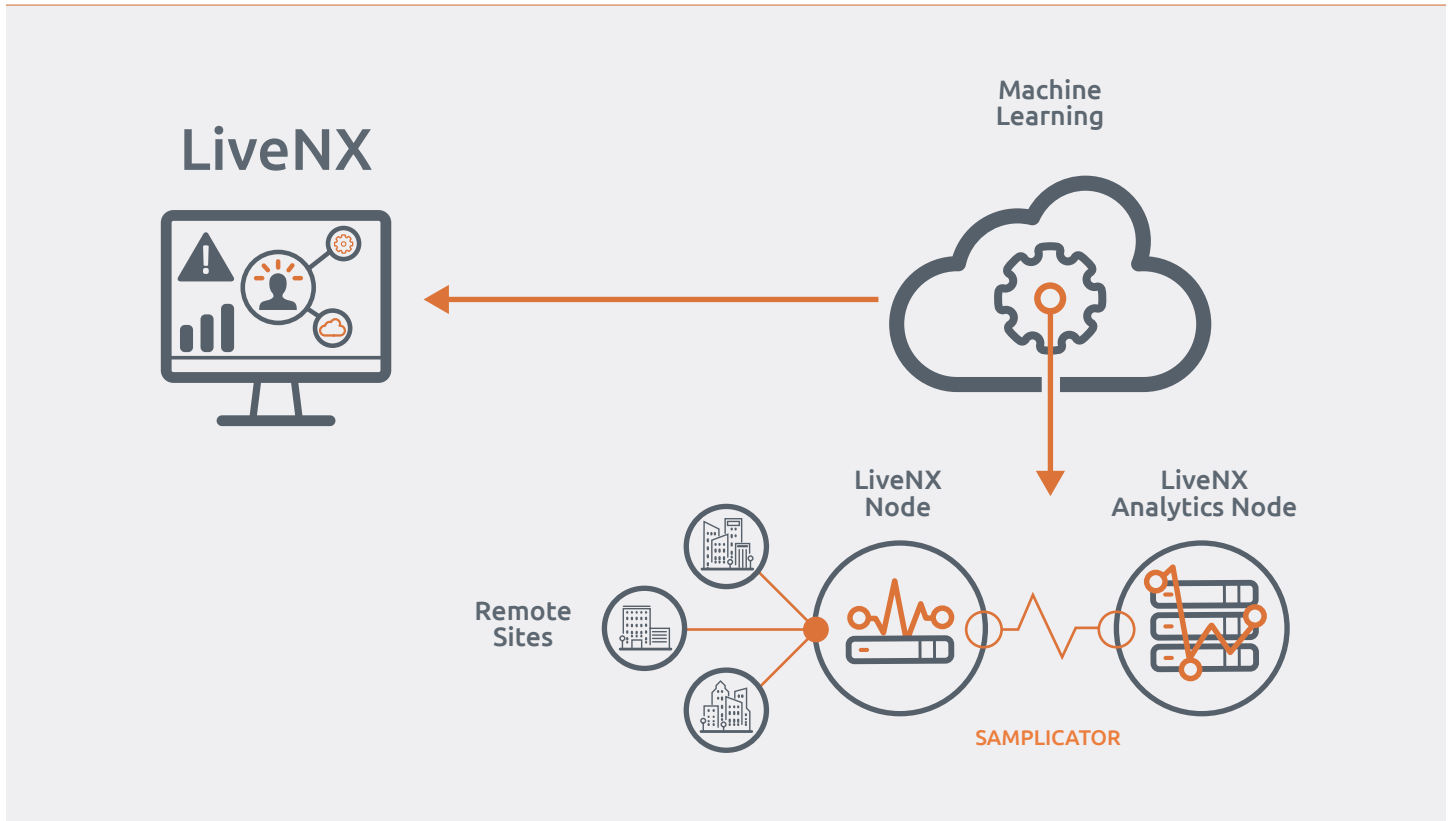
Latency:

MOS performance measurements, loss, jitter

Large-scale:

Wizard-based IP SLA provisioning in full-mesh and hub/spoke configuration

Integrations and Component Architecture



Deployment Models:

- Single Server/Node deployed as single system
- Multi-Server with nodes deployed anywhere there is IP connectivity

LiveNX

LiveNX is a network performance analytics platform with patented end-to-end visualization for a global view of the network and the ability to drill-down to individual devices. Using LiveNX, enterprises gain real-time and continuous insight into network traffic based on application and user level activity. LiveNX offers the ability to gather and analyze volumes of network data at scale from every device, application and user to reduce mean time to repair, and it performs exploratory and explanatory analysis.

LiveInsight

LiveInsight is a cloud-based, add-on software module that integrates with the scalable, tiered architecture of LiveNX to collect, analyze, and generate insights that allows operators to manage the performance of the network, applications and user experience.

LiveUX

LiveUX monitors end-user experience of web applications. By combining the end-user experience metrics with the network performance monitoring information, you can quickly triage performance issues.

- Integrated LiveNX and LiveUX dashboard for instant visibility of site health, network devices, application usage, and application performance (incl. Unified Communications).
- Quickly identify the sites that are experiencing performance degradation and the applications impacted
- From the site, drill down to examine network conditions including bandwidth utilization, link errors, QoS metrics and applications that are competing for the bandwidth

LiveNX Monitor of Monitors

LiveNX Monitor of Monitors provides a single-pane-of-glass for server settings, system health, sites and configuration, aggregating multiple geographical or organizationally segmented LiveNX domains. Through an aggregation layer, each LiveNX server domain instance injects relevant data for summary dashboard views and management by way of a north-bound REST API.

System Requirements

Deployment Options

Component	Virtual Appliance (.ova)	Virtual Appliance (Hyper-V)	Amazon Web Services (AMI)	Microsoft Azure
Monitor of Monitors	X			
LiveNX Server	X	X	X	X
LiveNX Node	X	X	X	X
LiveNX Analytics Node	X	X		
LiveAgent	X			
LiveSensor	X			

Client

- Windows 7, 8, 10 or Mac OSX 64-bit OS
- 4 Cores
- 8 GB RAM
- Web browser: IE9 and higher, Firefox, Chrome and Safari

Server/Node Virtual Appliances

- Custom—Less than 25 devices or less than 25k flows/sec; targeted at small laptop deployments or starter platform, customer able to configure additional data disks
 - 2 vCPU Xeon or i7
 - 4 GB RAM
 - 250 GB data disk
- Small—Less than 100 devices or less than 100k flows/sec
 - 8 vCPU Xeon or i7
 - 16 GB RAM
 - 2 TB data disk
- Medium—100 to 500 devices or less than 200k flows/sec
 - 16 vCPU Xeon or i7
 - 32 GB RAM
 - 4 TB data disk
- Large—500 to 1,000 devices or greater than 200k flows/sec
 - 32 vCPU Xeon or i7
 - 32 GB RAM
 - 8 TB data disk
- Cisco NFVIS Hosted with IOS XE 16

LiveSensor OVA (Optional)

- Monitor 1Gbps
- Virtual Hardware
 - 4 vCPU
 - 8GB of RAM
 - 50GB Disk
- Virtual Platform
 - VMware ESXi v5.0+
 - VMware Hardware Version 8 (vmx-8)
- Network Hardware
 - At least 2 Physical NICS on ESXi
 - Support up to 10Gbps

NOTE: Virtual NICs on OVA are utilizing VMXNET

Network Device Support

LiveNX Flow

LiveNX Flow provides advanced end-to-end system-level flow visualizations for multi-vendor networks. The following devices have gone through flow-analysis testing with LiveNX.

Adtran NetVanta Series Routers	F5 BIG-IP Application Delivery Controller Platforms
Alcatel-Lucent Routers	Gigamon GigaSMART
Brocade Series Routers	Hewlett-Packard Enterprise Procurve Series Switches
Cisco Series Routers (ISR Series, CRS-1, ASR 1000 & ASR 9000 Series Routers, ENCS 5000)	Ixia's Network Visibility Solution
Cisco Catalyst Switches	Juniper MX Series Routers
Cisco Nexus Switches (Nexus 3000, 7000 & 9000 Series)	nTop nProbe
Cisco ASA 5500 Series Firewalls	Palo Alto Networks Firewalls
Cisco AnyConnect Network Visibility Module on Windows and Mac OS X Platforms	Riverbed SteelHead WAN Optimization Controllers
Cisco DNA Center, Cisco APIC-EM Cisco Meraki MX	Silver Peak WAN Optimization Controllers
Cisco NetFlow Generation Appliance	Cisco Viptela vEdge Routers Cisco Viptela VManage API
Extreme Network Switches	Ziften ZFlow

LiveNX IP SLA

Cisco Series Routers: 800, 1000, 1700, 1800, 1900, 2600, 2600XM, 2800, 2900, 3600, 3700, 3800, 3900, 4300, 4400, 7200, 7600, ASR1000, CSR 1000V are supported.

LiveNX LAN

Cisco Catalyst Series Switches: 2960, 2960-X, 3560, 3650, 3750, 3850, 4500, 6500 and 9000 are supported.

LiveNX Routing

Cisco Series Routers: 800, 1700, 1800, 1900, 2600, 2600XM, 2800, 2900, 3600, 3700, 3800, 3900, 4300, 4400, 7200, 7600, ASR1000, CSR 1000V are supported.

LiveNX QoS Monitor

LiveNX QoS Monitor provides quality of service monitoring and troubleshooting for Cisco router and switches.

- Cisco Series Routers: 800, 1000, 1700, 1800, 1900, 2600, 2600XM, 2800, 2900, 3600, 3700, 3800, 3900, 4300, 4400, 7200, 7600, ASR1000, CSR 1000V
- Cisco ASR 1000 and 9000
Recommend IOS versions 12.3 or higher or 15.0 or higher for use with the software (IOS XE 2.6.0 or higher for ASR 1000 series). Earlier IOS versions may also work but are not officially supported. General-release IOS versions are recommended, although early- and limited- release versions will also work with LiveNX.
- Cisco Catalyst Series Switches: 3650, 3850, 4500-X and 9000
Limited LiveNX QoS Monitor support on Layer 3-routable interfaces and VLANs depending upon Cisco hardware capabilities.
- Cisco 5000 Series Enterprise Network Compute System

Cisco Nexus Series Switches: 7000

LiveNX QoS Configure

LiveNX QoS Configure provides for configuring and troubleshooting Quality of Service for Cisco routers and switches.

- Cisco Series Routers: 800, 1000, 1700, 1800, 1900, 2600, 2600XM, 2800, 2900, 3600, 3700, 3800, 3900, 4300, 4400, 7200, 7600, ASR1000, CSR 1000V
Recommend IOS versions 12.3 or higher or 15.0 or higher for use with the software (IOS XE 2.6.0 or higher for ASR 1000 series). Earlier IOS versions may also work but are not officially supported. General-release IOS versions are recommended, although early- and limited-release versions will also work with LiveNX.
- Cisco Catalyst Series Switches: 3850 & 4500-X
Limited LiveNX QoS Monitor support on Layer 3-routable interfaces and VLANs depending upon Cisco hardware capabilities.
- Cisco Nexus Series Switches: 7000 Series are partially supported