

Visual Analytics Platform for Network Performance Monitoring and Diagnostics

End-to-end Flow Visualizations Across the Network

The interactive network topology of LiveNX displays traffic flows and the network devices that communicate those flows across your network: routers, switches, wireless devices, firewalls, WAN Optimization Controllers, Application Delivery Controllers, etc. The topology allows network managers to identify the pertinent characteristics of any issues, and then pivot to the topology for more detail analysis. Additionally, historical flows can be examined from any date and time in the past with the flow playback feature.

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 path from the branch-office, through the service provider(s) to the data center where the applications reside, for meaningful and actionable information.

What's New in LiveNX

Advanced Analytics

Simple yet deep visualization across the entire network topology to see issues and fix them quickly..

Extended Network Visibility

Extended visibility into SDN controllers with API-based integrations simplifies access to additional network information.

User-level Situational Awareness

Spot user-specific performance issues and quickly fix the problem to optimize the online experience. LDAP integration streamlines and automates time consuming administrative tasks.

Integration with Cisco APIC-EM

Easily provision a new Cisco IWAN site, add devices for monitoring, validate deployments, and efficiently manage on-going network operations.

Capacity Planning

Identify the most changed and most heavily used resources such as bandwidth, CPU utilization and memory usage. Drill-down views provide details such as interface statistics and errors. Additionally, pivot to other reports to view pertinent data like top applications and top conversations to identify heavy bandwidth usage to align bandwidth consumption with business policies.

Stories with Built-in Best Practices

Guided Workflows with embedded best practices to simplify your network management tasks, such as: Capacity Planning, Device Inventory, Security Flow Analysis, and Site-to-Site Traffic Analysis.



LiveNX 6.1.0 release delivers enhancements to the Web UI, including advanced site-to-site traffic analysis for a systemic approach to assessing and troubleshooting network issues as well as deep analytics to identify outliers and expose issues that often go unnoticed.

LiveNX 6.1.0 Key Features

Dashboards with real-time data indicate current network health:

- Network-wide and site-based dashboards
- Application Dashboard provides instant application performance visibility
- System Dashboard for monitoring overall health and core components of the system

Alerts to monitor real-time and threshold conditions around the clock. Alerts can be sent via e-mail for remote notification.

Reporting of real-time and historical data to see trends over a quarter or a year. Includes the ability to share, customize, schedule, and export in CSV or PDF formats.

Topology Maps (both geographical and logical) provide visual representation of your site(s) and health maps of network devices, from a single physical device to multi-layer topological information of connections, interfaces, traffic, and routes. Color cues and graphic images indicate status and alarms of network elements.

Search and Filter across real-time and historical data to investigate relevant information across hundreds of reports and millions of flows.

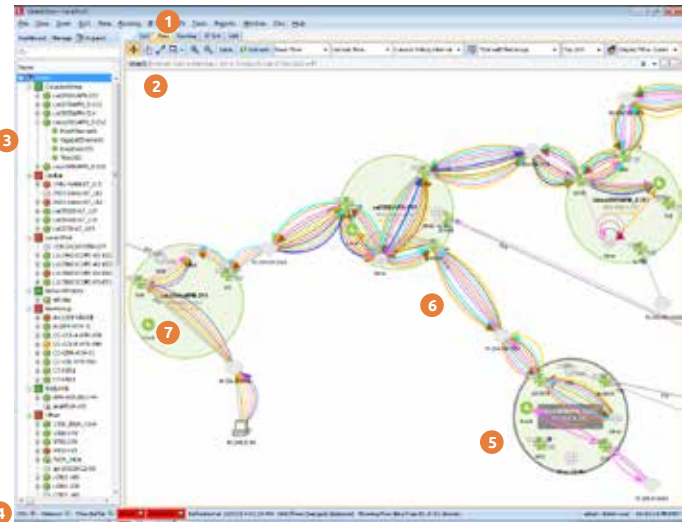
Network Discovery to automate device discovery via an IP address range, a list of individual IP addresses, a seed device, or imported lists. Additionally discover and define network semantics including Sites, capacity and IP address.

Access Control and Single Sign-On provide role-based access control and user authentication with LDAP directory and single sign-on integration. For instance:

- Administrator Role controls all aspects of LiveNX
- Full Configuration Role allows configuration and monitoring control
- Monitor Only Role can view allowed devices in reports, dashboard, topology, alerts, search and device

API (RESTful) for developing applications or to create custom reports from CSV or JSON. OAuth2 protocol for authentication with built in Swagger-based interactive documentation.

Point-and-Click Configuration of Cisco Technologies through bulk provisioning, to quickly leverage Cisco advanced technologies: Flexible NetFlow, NBAR2, Performance Monitor, IP SLA, ACLs, Policy-based Routes, QoS, and PFRv3.



1. Tabbed views for QoS, Flow, Routing, LAN, or IP SLA. Each tab provides a different overlay and user options specific to the selected view.
2. Search quickly to find specific information with an easy keyword search approach across hundreds of reports and millions of flows.
3. Devices and interfaces in a hierarchical view.
4. Status indicators for CPU, memory, flow buffers, alerts and more. Alerts can also be sent via e-mail for remote notification.
5. Network devices (large circles), interfaces (small circles), interconnections, flows, interface bandwidth, congestion, and more. Click on a device, interface, or flow for more details. Click and drag to rearrange or resize items for even better visibility. Devices can also be logically grouped or auto-collapsed to streamline management of larger networks.
6. Curved lines indicate traffic flows.
7. Interfaces—Top half indicates ingress. Lower half indicates egress. Numbers indicate bandwidth.
 - Green = active
 - Dark green = QoS policy applied
 - Amber = congested
 - Gray = down

LiveNX Software Versions	
LiveNX Enterprise	LiveNX Professional
<ul style="list-style-type: none"> • Multi-server, Multi-user with unlimited historical • Ideal for organizations with more than one network administrator or engineers • Full-feature functionality 	<ul style="list-style-type: none"> • Single Server, Single User with 5-day historical • Ideal for a small organization with network operations and up to 200 devices
Licensing Options	
Subscription License Model Offered as 1-year, 3-year, 5-year Term	Perpetual License Model Offered with 1-year, 3-year, 5-year Maintenance & Support Term



LiveNX 6.1.0 Key Capabilities

Flow Visualization for Network Troubleshooting

Visualize trouble spots on the network for a better understanding of traffic patterns.

- Application and Flow path analysis
- Multivendor 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
- 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
- Topology export to Visio

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

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 MQC QoS configuration support including WRED, CBWFQ, and Priority Queuing
- 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

LAN

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

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 operations are easily accessible for generating and monitoring 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

LiveNX 6.1.0 Integrations

LiveSensor Integration (optional purchasable module)

NetFlow generation to provide application visibility and application recognition in the absence of flow-exporting devices.

- Software-based packet analysis
- Deep Packet Inspection
- Application layer visibility (e.g. Skype, BitTorrent, Citrix)
- Supports multivendor environments

LiveUX Integration (optional purchasable module)

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.
- 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.

APIC-EM

Retrieve network inventory information & device metadata including network semantics via APIC-EM API. APIC-EM automates the provisioning of LiveNX NetFlow templates & cross-launches LiveNX WebUI.

Managed Service Provider Platform

Provide a framework for Managed Service Providers to remotely deliver network-based services to Enterprises.

- Network Address Translation for Node to Platform communication
- Monitor of monitors reference implementation to track the health and performance of Enterprise networks
- API for automation

Software Defined WAN Monitoring

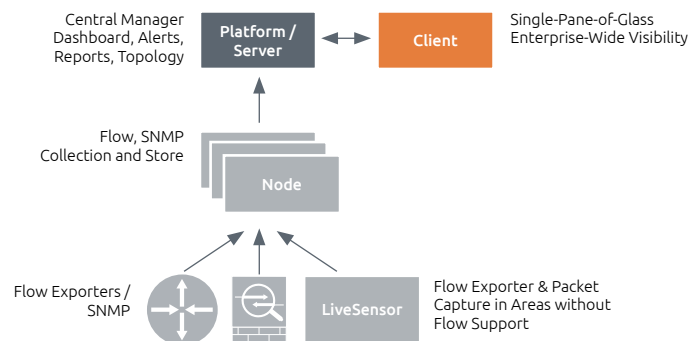
GUI-based management for SD-WAN monitoring for path control and application performance optimization.

- 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 change(s)

Cisco IWAN Support

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

LiveNX 6.1.0 Architecture



Deployment Models:

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

LiveNX 6.1.0 System Requirements

Deployment Options

LiveNX components can be deployed via two options:

Component	Virtual Appliances (preferred)	Installers (EOL 7/1/2017)
Client	Installer: MacOS, Win 32/64	Installer: MacOS, Win 32/64
Server	All-in-one	Installer: Win64/Linux
Platform	Server & Platform OVA	All-in-one Server & Platform OVA
Node (optional)	Node OVA	Installer: Win64/Linux
LiveSensor (optional)	LiveSensor OVA	LiveSensor OVA

Client

- Windows 7, 8, 10 or Mac OSX 64 bit OS
- 4 Cores
- 8 GB RAM
- Web browser: IE (> Version 8), Firefox, Chrome and Safari

Server/Node

The sizing of your LiveNX Server is critical to its overall stability and performance. These are minimum recommendations.

- Windows 64-bit Operating System – Server 2008 or 2012 R2, Windows 7 (Professional or Ultimate) with .NET framework v3.5.1+
- Linux RHEL 7.1 or 7.2 /CENTOS 6.7 or 6.8 with GNOME UI installed
- For less than 100 devices or less than 100K flows/sec:
 - 8 Core 2+ GHz CPU
 - 8 GB RAM
 - 2-6 TB 7,200 RPM HD¹
- For 100-500 devices or less than 200K flows/sec:
 - 12 Core, 2+ GHz CPU
 - 16 GB RAM
 - 3-10 TB 7,200 RPM HD¹
- For 500-1,000 devices:
 - 2x12 Core, 2+GHz CPU
 - 16 GB RAM
 - 5-10 TB, 7,200+ RPM HD¹
- Virtual Machine
 - Adequate core and storage allocation
 - Store: local store preferred, virtual thick disk setting
 - VMware ESXi 5.1 or later, recommended for production environments
 - o vMotion Supported
 - Compatible with most VM systems
 - o VMware products, Oracle VirtualBox, Microsoft Hyper-V 6.0+, Citrix Xen

¹ Disk usage depends on network traffic pattern. For higher performance use RAID 10 or RAID 0 if redundancy is not required.

All-in-One Server & Platform OVA, Node OVA

- Custom—Less than 25 devices or less than 25k flows/sec; targeted at small laptop deployments or starter platform (size not available for Node OVA)
 - 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

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
 - o Support up to 10Gbps

NOTE: Virtual NICs on OVA are utilizing VMXNET

LiveNX 6.1.0 Network Device Support

LiveNX Flow

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

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

LiveNX QoS Configure

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

- Cisco Series Routers: 800, 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

LiveNX QoS Monitor

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

- Cisco Series Routers: 800, 1700, 1800, 1900, 2600, 2600XM, 2800, 2900, 3600, 3700, 3800, 3900, 4300, 4400, 7200, 7600, ASR1000, CSR 1000V
- Cisco ASR 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
Limited LiveNX QoS Monitor support on Layer 3-routable interfaces and VLANs depending upon Cisco hardware capabilities.
- Cisco Nexus Series Switches: 7000

LiveNX IP SLA

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 LAN

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

LiveAction[™]
Simplifying the Network

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