

JUNOS SPACE NETWORK DIRECTOR

Product Overview

Whether in the campus network or the data center, today's network managers are learning to overcome many new challenges.

Data center network administrators face the rapid adoption of virtualization, cloud services and hybrid multi-site deployments.

In the campus, wireless devices are increasing at a rapid rate, attacks and threats are evolving, and wireless networks demand mission-critical uptime.

Junos Space Network Director is a next-generation network management solution that allows users to visualize, analyze and control the entire enterprise network—data center and campus, physical and virtual, and wired and wireless—through a single pane of glass.

Product Description

Juniper Networks® Junos® Space Network Director provides a smart, comprehensive and automated network management solution that enables network administrators to visualize, analyze, and control their entire enterprise network—data center and campus, physical and virtual, and wired and wireless—through a single pane of glass. In the data center, Network Director helps administrators manage and synchronize both physical and virtual environments, ensuring network policies follow workloads as they move from server to server or from virtual machine to virtual machine. In the campus, Network Director automates routine management tasks such as network provisioning and troubleshooting, dramatically improving operational efficiency and reliability.

Network Director incorporates key functions that address the challenges posed by the rapid adoption of virtualization across data centers and cloud deployments. In addition, Network Director offers sophisticated analytics for high performance data centers and open REST APIs for service orchestration integration with third-party platforms. These smart network management solutions are delivered through key capabilities:

Automate

- **Zero-touch Provisioning** simplifies the deployment of networks without requiring user intervention, providing policy-driven plug-and-play provisioning and network bring up operations.
- **Bulk Provisioning** enables faster service rollout and activation while protecting against configuration errors with profile-based and pre-validated configurations. Bulk operation can be performed at logical (access, aggregation, core) or location (sites, buildings, floors, racks) levels.

Analyze

- **Performance Analyzer** provides real-time and trended monitoring of VMs, users, ports and RF environments, as well as high frequency monitoring that provides valuable performance data for monitoring queue depth and heat-map visualization. Network Director performs analysis of the entire network, identifying heat-maps, over and under utilized ports, latency, and top VMs, users, devices and ports.
- **VM Analyzer** provides real-time physical and virtual topology views, tracks vMotion activity including virtual machine creation, deletion and moves, and maintains complete virtual network inventory.
- **Fabric Analyzer** monitors and analyzes the health of the entire network fabric, including Virtual Chassis Fabric configurations and QFabric Systems, increasing service availability.
- **Mobile Analyzer** enables real-time and trended monitoring of RF environments and provides information about radio frequency performance, mobile users' experience, roaming history and interference analysis.

Orchestrate

- **Network Director API** is a set of RESTful APIs that provide a single-point interface to all orchestration tools for end-to-end configuration and management of network services. Network Director API abstracts L2/L3 connectivity as well as security device configuration complexity, enabling orchestration tools to distribute services across Juniper infrastructure elements.
- Network Director integrates with VMware vCenter and orchestrates physical network based on vMotion activity.

Network Director Benefits

- Expedited error-free service rollout, enhanced visibility, and fast troubleshooting
- Operational efficiency through a correlated view of various network elements, offering a holistic view of every aspect of the network and removing the need for disjointed applications throughout the network lifecycle
- Faster rollout and activation of services while protecting against configuration errors with profile-based and pre-validated configurations

By providing a unified view of the network infrastructure through a single pane of glass, as well as a correlated view of overlay services and user experiences running on that network, Network Director allows users to track aggregated utilization, network hotspots, failures, correlated radio frequency (RF) data, and usage down to a user or virtual machine level, providing deep visibility and easy troubleshooting of connectivity, equipment, and general failures.

Network Director provides a simple-to-use user interface that can be accessed through standard Web browsers from a laptop or tablet device (see Figure 1). The interface is based on a task-oriented paradigm that uses specific task-based workflows to simplify the way users interact with the system, enabling them to accomplish administrative tasks quickly, efficiently, and without errors. Filtering, searching, sorting, column selection, and other actions make looking for specific ports, users, devices, virtual machines (VMs), or access points (APs) efficient and easy.

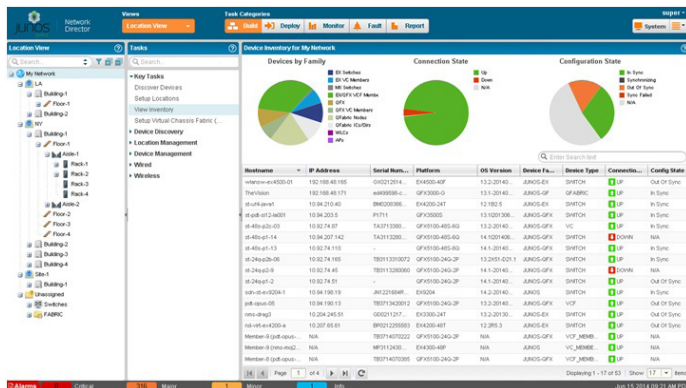


Figure 1: Network Director GUI

Architecture and Key Components

Complete Lifecycle Management

Network Director fully integrates all lifecycle management functions into a single application, lowering operational and capital expenditures by eliminating the need for multiple platforms to perform configuration, monitoring, or fault management for a wired and wireless management solution.

Each lifecycle stage is represented as a mode in Network Director (see Figure 2).

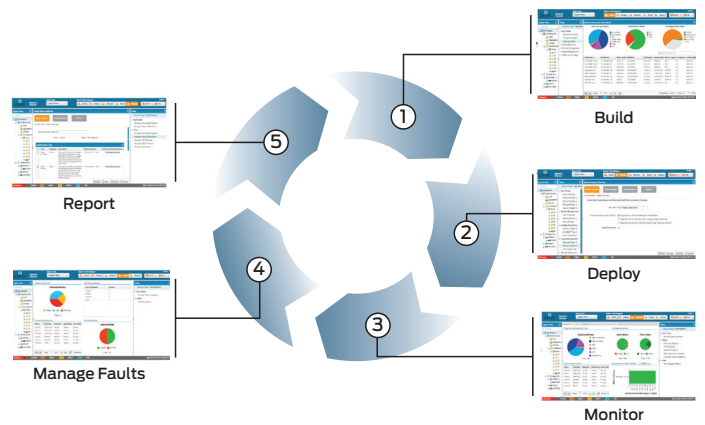


Figure 2: Full lifecycle management

Views

Network Director improves operational efficiency by allowing users to manage the network from different views, groupings, and perspectives.

Dashboard View

The Network Director Dashboard view is a customizable page that provides a visual indication of overall network usage, utilization, latency, top talkers and alarms in color-coded heat maps representing devices, ports, hosts, VMs and users. Each device is represented by a color-coded box in the heat map; the color indicates the level of port utilization and latency on the device. “Cooler” colors indicate lower port utilization/latency, while “hotter” colors indicate higher port utilization/latency. The size of a device box is proportional to the total bandwidth of all the device's ports.

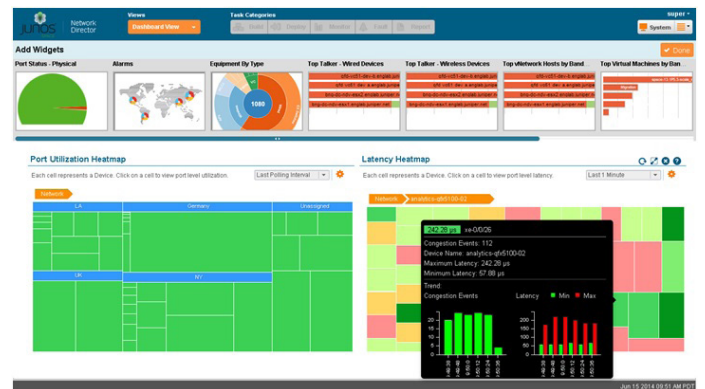


Figure 3: Dashboard View

Logical View

In Logical view, devices are organized by their logical relationships in the network. For example, all switches appear in the Switching Network and are categorized by their role: access, aggregation, or core.

Location View

In Location view, devices are organized by their physical location in the network. This view is built in two steps: first, by creating sites, buildings, floors, aisles, racks, outdoor areas, and so on; and second, by assigning switches, wireless controllers, access points, and the Juniper Networks QFabric™ System to appropriate location objects—building, floor, aisle, rack, etc.

Device View

In Device view, network elements are organized by device type: switches, wireless LAN controllers, and data center fabrics including Virtual Chassis Fabrics and QFabric Systems. Devices are further organized by device model within each device type.

Custom Group

Custom Group view provides visibility into the network organized by user-created custom groups. Users can manually add devices or create rules for automatically adding devices to a custom group.

Virtual View

Virtual view provides visibility into virtual networks, including VMware vCenter servers, hosts, VMs, and virtual switches. Virtual view also provides detailed connectivity information between virtual and physical networks.

Topology View

Topology view provides a topological map of your network, showing all discovered devices overlaid on an integrated map with the flexibility to organize by sites, buildings, floors, aisles, and racks. Topology view also provides zoom-in and zoom-out functionality, providing a detailed macro-to-micro view of the network.

Features and Benefits

Table 1: Network Director Modes and Major Features

Lifecycle/Mode	Major Features
Build	Configuration creation, device discovery, inventory view, configuration validation, and physical and virtual network views
Deploy	Configuration deployment, image management, and configuration reconciliation
Monitor	Traffic monitoring, utilization, session monitoring, status monitoring, troubleshooting, and Fabric Analyzer
Fault	Fault management lifecycle, annotation of faults, search, and notification
Report	Reports in CSV, HTML, and PDF format; archiving, usage, fault, inventory, and audit trail-based reports

Build Mode

Network Director Build mode is used to discover network devices and create and manage device configurations. Build mode also allows devices to be organized into hierarchical groupings based on logical relationships or physical locations.

- In Network Director, profiles are used to configure common parameters across the network. Profiles created using wizards that seamlessly handle various configuration elements are easily associated with a device, collection of devices, port, logical entities, or even physical locations. To avoid errors, configurations created through profiles for a given device are validated for their semantics and adherence to best practices. Profiles offer users scalability, flexibility, and rapid configuration deployment, and they help eliminate user errors and repetitive tasks.
- For wired deployments, port configurations such as authentication options, Power over Ethernet (PoE) settings, VLANs, and filters are supported. Advanced settings for quality-of-service (QoS) policing and shaping as well as buffer depths are also available.
- For wireless LAN deployments, the creation of mobility domains, clusters, and services is supported across the deployment. The configuration of rapid deployment features such as auto access points, auto RF, band steering, and load balancing are available. Service settings, which include service set identifier (SSID) authentication and authorization attributes, security settings, and

more can be set centrally and deployed across the entire network or parts of the deployment. Advanced RF settings are also available for tuning specific RF parameters for optimum performance.

- Network Director supports existing deployments. As devices are discovered, their configurations are parsed for various elements to map the configuration data to profiles. Multiple devices with the same configuration will have a single profile created that is associated with those devices.
- The association of profiles to devices is also easily accomplished and can be applied across a single port, a collection of ports, multiple devices, a collection of devices, or other objects such as location across the entire network. The network administrator, for instance, can choose to make a management VLAN available across the entire network but keep access VLANs localized to a specific floor or building.

Deploy Mode

In Deploy mode, device-related changes such as image management, configuration pushes, and reconciliations are applied. As with other modes, actions can be performed on a device, a group of devices, or a location.

- Zero-touch provisioning simplifies the deployment of networks without requiring user intervention while providing policy-driven plug-and-play bootstrap and network bring up operations.
- Manage software images. Network Director maintains a repository of software images that have been uploaded. Multiple software images from the repository can be deployed in a single action even when they are on multiple devices. Devices can be selected based on location, device model, or the role of the device in the network. The staging of the image—that is, downloading the software package to the device—can be separated from the actual installation of the package. Both the individual steps of staging and the upgrade can be performed immediately or as a scheduled event.
- Initiate, schedule, and track configuration deployment. Changes to a device's configuration performed in Build mode result in the device being added to a list of devices with pending changes. Pending changes can be applied to the device in Deploy mode.
- Resynchronize device configuration. Network Director will automatically detect if a configuration on a device is out of sync. The administrator has the option of keeping the current configuration or changing the Network Director configuration database to reflect what has been observed in the network.
- Restore and back up device configuration. Ethernet switch or WLAN device configurations can be backed up in Network Director. Network managers can restore an archived configuration at a later date.

Monitor Mode

Monitor mode provides detailed visibility into network status and performance by collecting information from devices and maintaining that information in a database (see Figure 4). The Monitor lifecycle offers graphs that are easy to understand and tables that can be sorted and filtered, allowing users to quickly visualize the state of the network, spot trends developing over time, and review important details. The Monitor lifecycle divides monitoring activity into the following categories:

- **Traffic Monitoring:** The Traffic Monitoring view provides information for analyzing traffic on Ethernet switches, QFabric Systems, Virtual Chassis Fabric configurations and WLAN devices. It provides an overview of the traffic on each device such as the proportion of multicast, unicast, or broadcast traffic on the network or a trend in packet errors. Tasks provide detailed views of traffic on individual ports or VLANs, as well as port utilization.

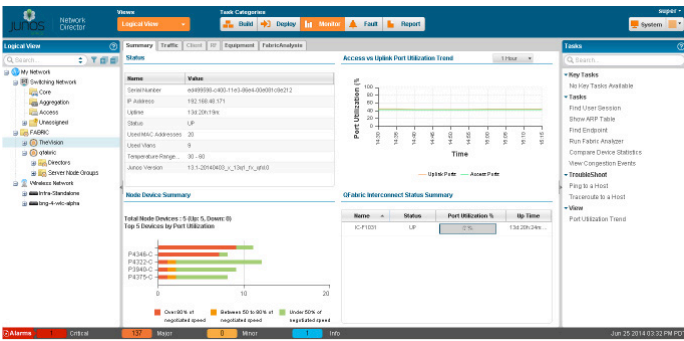


Figure 4: Monitor mode view

- **Client Monitoring:** The Client Monitoring view provides information about clients and sessions on the network such as mobile devices, VoIP phones, laptops, printers, and security cameras. It also provides overall client session activity, including total number of sessions, sessions consuming the most bandwidth, and trends in the number of sessions. In addition, detailed information about each client such as media access control (MAC) address, IP address, user name (802.1X clients), client VLAN and port, or the AP providing access to a wireless client, can be viewed.
- **Wireless (RF) Monitoring:** As part of Mobile Analyzer, the RF Monitoring view provides information about radio frequency performance such as throughput, retransmissions, packet errors, signal-to-noise ratio, and interference sources. It provides visibility into an access point's neighbors and can display spectrograms for troubleshooting interference sources.
- **Equipment Monitoring:** The Equipment Monitoring view provides resource usage and status information for network devices. It provides CPU and memory usage, power supply, fan status, port status, and general device information for Ethernet switches (including Virtual Chassis connected switches) and WLAN controllers and access points.
- **Fabric Analyzer:** The Fabric Analyzer provides health, connectivity, and topology information of the selected Virtual Chassis Fabric configuration or QFabric System. It performs redundancy, minimum connectivity, and minimum component checks as part of an overall health analysis, as well as providing control plane connectivity information, data plane connectivity information, and general health of the system (see Figure 5). The Topology views lay out QFabric components or Virtual Chassis Fabric deployments configured in spine-and-leaf mode (see Figure 6).

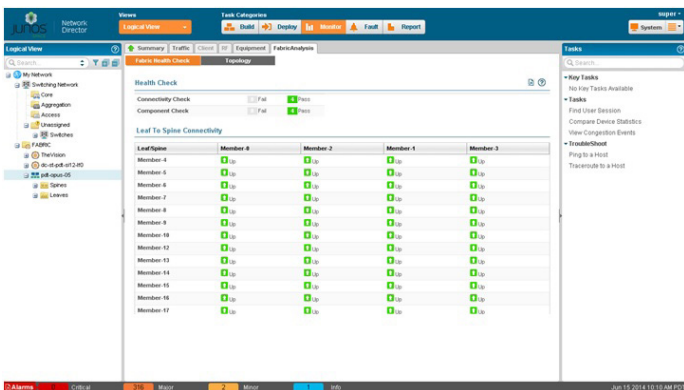


Figure 5: Virtual Chassis Fabric—Health Check

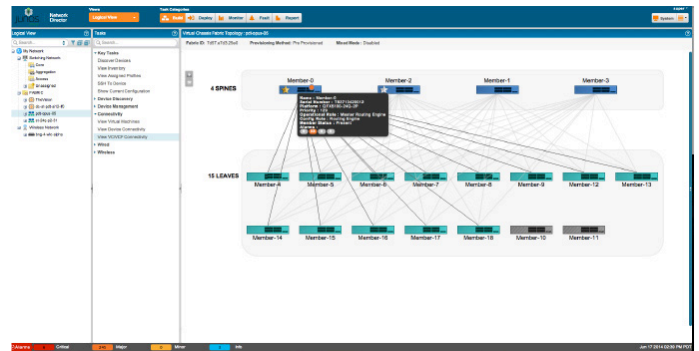


Figure 6: Virtual Chassis Fabric Topology

Monitoring Mode features include:

- Analytics Engine to collect and analyze high-frequency statistics data from QFX Series switches to create network heat maps and monitor latency
- Virtual Chassis Fabric health, connectivity and topology views
- QFabric System control and data plane connectivity and health check
- QFabric System control and data plane topology views
- Monitoring and alarms for network elements
- Summary of alerts and network traffic by infrastructure (port, device, virtual machines, network) and location
- Device, virtual controller cluster, and Virtual Chassis status and availability
- Top N devices by port utilization
- Access vs. trunk port utilization
- Comparison statistics between different interfaces
- Detailed user and device information and distribution by mobile device type (iPhone, Android, etc.)
- Finding users and end nodes in the network
- Up to one year of trended data

User-centric features include:

- User statistics and session status
- Device profiling
- Present location and roaming history
- Session-related alarms (authentication and authorization failures, threshold crossing, invalid IP address, etc.)

Security features:

- Wireless intrusion detection and prevention system (WIDS/WIPS) alarms

RF views:

- RF parameters (signal-to-noise ratio, utilization, etc.)
- Spectrum management

Fault Mode

Fault mode provides visibility into unexpected network events and manages network faults or exceptions, which appear as alarms in Network Director. Network Director collects, analyzes, and correlates these low-level events into alarms, allowing network administrators to view current active alarms, summaries of categorized alarms, and alarm details, including the individual events that are correlated to an alarm. Fault mode features include:

- Status, performance, and threshold views
- Ability to apply de-duplication and correlation with monitoring

- Threshold, outage, and trend views
- Ability to receive SNMP traps directly from devices
- Event and alarm generation and display
- Alarm acknowledgement, escalation, and resolution
- Device fault detection based on collected data
- Virtual networking alarms from VMware

Report Mode

Report mode enables administrators to run reports on collected data that is stored on a server. Network Director can set up report definitions that specify the format of the report (HTML, PDF, CSV), the historical time frame that the report covers, and the report contents. Users can choose between predefined report content for reporting on alarms, Network Director activity, device inventory, sessions, traffic, and RF information. Scope can be selected around a device, a location, or a group of devices. Reports can be scheduled to run at a specified time in the future or on a recurring basis.

Generated reports are stored and are available for downloading. Reports can be delivered through e-mail or archived to an SCP file server when the report definition is created.

Data Center Virtualization Management

Network Director unifies physical, wireless, and virtual networks, providing network operators with a comprehensive view of the complete end-to-end virtual-to-physical network infrastructure. Network Director integrates with VMware vCenter, delivering a combined solution that benefits from both vendors' innovation and from Juniper Networks' orchestration solutions. Virtual networks that run within virtualized servers deployed in the data center can be monitored and controlled.

- **Discover:** Update the complete virtual network inventory, including vSphere Hosts, virtual switches, and VMs, as well as existing Port Group definitions on the vSwitch
- **View inventory:** View the VMs that are connected to Juniper Networks EX Series Ethernet Switches (deployed as standalone devices or within a Virtual Chassis configuration), QFX Series switches, Virtual Chassis Fabric configurations or QFabric family systems in the network
- **View Connectivity:** View connectivity between virtual and physical networks and the association of virtual switches to physical switches

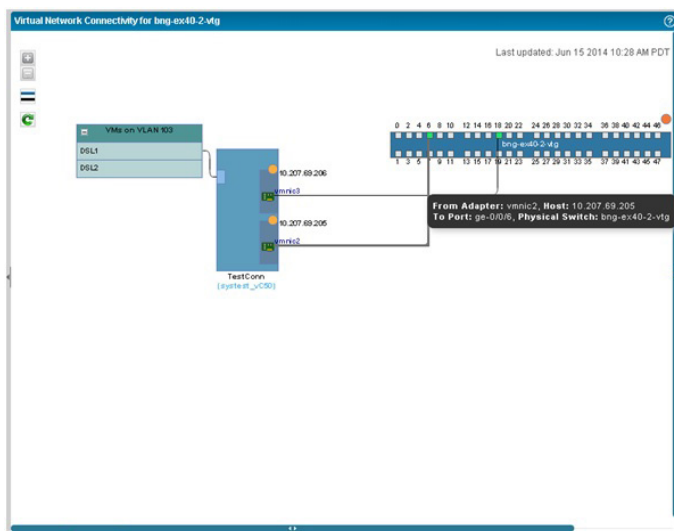


Figure 7: Virtual machine to physical switch connectivity

Topology View

Topology view shows all discovered devices in the network, displaying on a map where the devices are located across sites, buildings, floors, outdoor areas, closets, and racks, along with their physical connections to other devices in the network. Topology view also shows the physical and logical connectivity between various discovered interconnected devices. Topology view allows users to zoom in or out of a site, see how a device is connected to its immediate neighbors, including VMware hosts connected to the switch, or view alarm details, bandwidth of links, and real-time link data and state of the devices. Network Director also enables devices to be rearranged across buildings on the map.

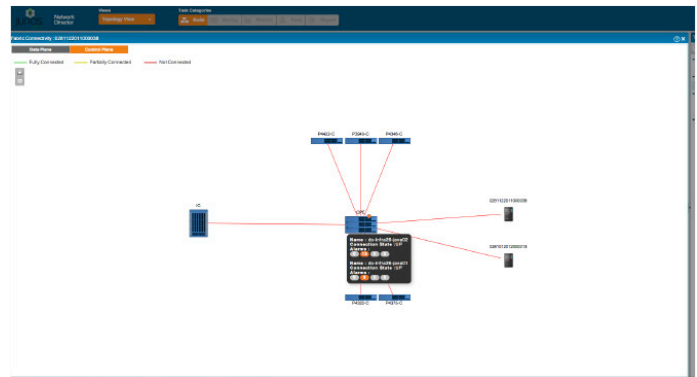


Figure 8: Topology View

Specifications

Navigation model

- Use task-based navigation based on the network management lifecycle

Network view and device selection

- View devices organized by logical relationships, locations, device type, custom group view, virtual view, or topology view
- Select logical, location, device-type, custom group, virtual, or topology view groupings to perform tasks on multiple devices simultaneously
- Search for devices in the network
- Define filters to selectively view specific logical, location, device-type, custom group, virtual, or topology groupings

User preferences

- Set user preferences, such as whether time is shown in the client time zone or server time zone

User management

- Use predefined or custom user roles to grant access to Network Director modes

Specifications (continued)

Table 2: Supported Platforms

Supported Platforms	Operating System
EX Series Ethernet Switches: <ul style="list-style-type: none"> EX2200, EX2200-C EX3200 EX3300: Standalone and with Virtual Chassis technology EX4200: Standalone and with Virtual Chassis technology EX4500: Standalone and with Virtual Chassis technology EX4550: Standalone and with Virtual Chassis technology Mixed EX4200, EX4500, EX4550 Virtual Chassis configurations EX6200 EX8200: Standalone and with Virtual Chassis technology 	Junos OS Release 11.4, 12.1, 12.2, 12.3, 13.2X50-D10, 13.2X50-D15, 13.2X51-D15, 13.2X51-D20
EX Series Ethernet Switches with ELS: <ul style="list-style-type: none"> EX4300 Standalone and with Virtual Chassis technology EX9200 	<ul style="list-style-type: none"> Junos OS Release 13.2X51-D20 for EX4300 Junos OS Release 13.2X51-D20 Junos OS Release 13.2R1, 13.2R2, 13.3R2 for EX9200
WLC Series Wireless LAN Controllers: <ul style="list-style-type: none"> WLC2 WLC8 WLC200 WLC800 WLC880 WLC2800 	<ul style="list-style-type: none"> MSS Release 7.7 and 8.0 for WLC2 MSS Release 7.7, 8.0, 9.0 and 9.1 for other controllers
Juniper Networks JunosV Wireless LAN Controller	MSS Release 9.0
WLA Series Wireless LAN Access Points: <ul style="list-style-type: none"> WLA321, WLA322 WLA422, WLA432 WLA522, WLA522E WLA532, WLA532E WLA620, WLA622 WLA632 	MSS Release 7.7, 8.0, and 9.0
QFX Series Ethernet Switches: <ul style="list-style-type: none"> QFX5100 Virtual Chassis Fabric QFX5100 QFX3500/QFX3600 (non ELS) QFX3500/QFX3600 ELS and Virtual Chassis QFabric Systems (QFX3000-G and QFX3000-M) 	<ul style="list-style-type: none"> Junos OS Release 13.1X52-D10 Junos OS Release 13.1X52-D10 Junos OS Release 12.3X50-D30.2 12.3X50-D35 .x, 12.3X50-D40, 12.3X50-D30.2 (except SSOR reconciliation), 12.3X50-D35 .x, 12.3X50-D40 Junos OS Release 13.1X52-D10, 13.1X50-D15

Orchestration API

ND orchestration API Application

- Single point for integration with external cloud/data center orchestration tools
- Support REST API for external consumption
- OpenStack plug-in
- Service and device abstraction
 - End-to-end provisioning
 - High-level APIs supporting L2, L3, security, and Internet/WAN
 - Provisioning of secure multitenant networks on a shared network infrastructure
- Translate service definition to network configuration for service mediation
- Define list of services based on capabilities and publish them in a service catalog

Virtualization Management

- Discover virtual networks
- Automatically orchestrate physical switches based on vMotion
- View hosts, virtual switches, and machines
- View connectivity between VMs, virtual switches, and physical switches
- View vMotion history
- VMware vCenter version 4.1, 5.0, 5.1 and 5.5
- VMware vSphere version 4.0, 4.1, 5.0, 5.1 and 5.5

Build Mode Features

Device discovery and device management

- Discover devices to be managed by Network Director
- View inventory of devices for selected logical, location, or device-type groupings
- Launch command-line interface (CLI SSH session), Junos Web interface (switches), or Web View interface (wireless LAN controllers)
- View physical inventory for a switch or a WLAN controller
- Add and configure access points in your wireless network (with existing access point configuration imported during device discovery)
- Assign switches to core, aggregation, or access roles for logical view
- Reboot switches, wireless LAN controllers, and access points
- View a device's current configuration
- View profiles assigned to a device
- Validate pending configuration on a device
- Set up QFabric System and Virtual Chassis Fabric

Configuration profiles

- Create, edit, or delete the following profiles:
 - Access profile (EX Series Ethernet Switches and WLC Series Wireless LAN Controllers)
 - Authentication profile (EX Series and WLC Series)
 - Authorization profile (WLC Series)
 - Class-of-service (CoS) profile (EX Series, QFX Series, QFabric System, and WLC Series)
 - Device basic settings profile (EX Series, QFX Series, QFabric System, and WLC Series)
 - Filter profile (EX Series, QFX Series, QFabric System, and WLC Series)
 - Port profile (EX Series, QFX Series, and QFabric System)
 - Radio profile (WLC Series)
 - VLAN profile (EX Series, QFX Series, QFabric System, and WLC Series)
 - WLAN service profile (WLC Series)
- Assign authorization, device basic settings, port, radio, and VLAN profiles to network objects
- Import existing configuration into system created profiles during device discovery and have profiles automatically assigned to devices

Specifications (continued)

Wireless network domains

- Create mobility domain, network domain, and enable Smart Mobile Virtual Controller clustering
- Import existing mobility domain and cluster configurations during device discovery

Location management

- Create sites, buildings, floors, closets, aisles, racks and outdoor areas for organizing “location” view
- Assign devices to locations

Deploy Mode Features

Configuration changes

- View pending configuration changes and validate changes before deploying configuration on devices
- Deploy changes on selected devices immediately or at a scheduled time
- View deployment results and manage configuration deployment jobs

Software images

- Maintain a repository of software images for switches and wireless LAN controllers
- Deploy selected images on selected devices immediately or at a scheduled time
- View deployment results and manage image deployment jobs

Resynchronize configuration

- Resynchronize the saved device configuration with the configuration on the device

Configuration file management

- Back up and restore device configuration files

Monitor Mode Features

Data capture

- Set polling periods for collecting different kinds of data
- Traffic monitoring
- View the following for traffic on switches and wireless LAN controllers:
 - Current mix of unicast, multicast, and broadcast packets, and trends over time
 - Packet error trend
 - Port traffic trend
 - Current port utilization and trend
 - VLAN traffic trend on switches
 - Virtual Chassis Control Protocol (VCCP) statistics
 - Fabric Analyzer for Virtual Chassis Fabric and QFabric System
 - Top VMs by bandwidth utilization
 - Host NIC bandwidth utilization
 - Virtual Switch summary by version
 - VM bandwidth utilization trend
 - Distribution of mobile devices

Mobile Analyzer: Client session monitoring

- Search for client session and view session history
- View the following for wireless and wired clients:
 - Top bandwidth clients by MAC address (wireless clients only)
 - Current session count and session trend
 - Client session details—user name, MAC address, device type, device group, device profile, AP name, SSID VLAN
 - Top APs by traffic and session
 - Current SSID statistics

Mobile Analyzer: Radio frequency (RF) monitoring

- View the following:
 - Throughput, packet error, and retransmit trends
 - Signal-to-noise ratio trend
 - RF interference sources
 - RF spectrogram (2.4 and 5 GHz)
 - RF neighborhood

Equipment status

- System information
- View the following:
 - Device status and information
 - CPU and memory usage
 - Fan and power supply status
 - Port status
 - Logical interface information and status
 - Virtual Chassis topology
 - Access point and radio status

Fault Mode Features

Alarm monitoring

- Correlate low-level faults into easy-to-understand alarms
- View current counts of critical, major, and minor alarms (always visible in user interface)
- View alarms for selected scope by category, severity, and state
- View individual alarm details
- Search for an alarm

Alarm management

- Select which alarms are enabled and select the severity level for alarms
- Configure the length of time that alarms are kept on the server
- Acknowledge, assign, annotate, and clear alarms

Specifications (continued)

Report Mode Features

Report content

- Available report types:
 - Fabric analyzer
 - Client details
 - Network usage
 - Security alarms
 - Alarm summary
 - Alarm history
 - Network Director audit trail
 - Device inventory
 - Top 10 bandwidth users
 - Active user sessions
 - Network device traffic
 - Network neighborhood for access point radios
 - VM inventory
 - VM vMotion history
 - RF interference detail
- Select time frame and scope covered by report

Report options

- Run reports immediately, or at a specified time, or on a recurring schedule
- Select report format (PDF, HTML, or CSV)
- Send reports in e-mail or send them to an SCP server for archiving

Report management

- View, delete, download generated reports

System Mode Features

Audit trail and job management

- View audit trail of Network Director user and system activity
- View and manage all jobs

Troubleshooting support

- Generate a compressed file of logs and other data to send to Juniper Networks for analysis

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit www.juniper.net/us/en/products-services/.

Ordering Information

Network Director utilizes a very simple perpetual licensing model and is licensed by the number of devices that it manages, including EX Series Ethernet Switches and WLA Series Wireless LAN Access Points. Whether the device is a wireless LAN access point or an Ethernet switch, it is counted as a device. Wireless LAN controllers are not counted towards the device count. Select any quantities and any combination of the following SKUs for the number of devices you plan to manage.

Part Number	Description
JS-NETDIR-10	Junos Space Network Director for 10 devices
JS-NETDIR-25	Junos Space Network Director for 25 devices
JS-NETDIR-100	Junos Space Network Director for 100 devices

Network Director is part of Junos Space and requires Junos Space Network Management Platform (JS-PLATFORM) to be installed.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

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