

# Junos<sup>®</sup> OS Software Release Notes for Juniper Networks QFX3000 QFabric Switches

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## New Features in Junos OS Release 11.3 for QFX3000 QFabric Switches

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To view the entire set of software information in PDF format, see the [Complete Software Guide for Junos OS for QFX Series Switches, Release 11.3](#).

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### Hardware

- **QFX3000 QFabric switch**—A highly scalable, distributed, Layer 2 and Layer 3 networking environment that provides a high-performance, low-latency, and unified interconnect solution for next-generation data centers. A QFX3000 QFabric switch collapses the traditional multi-tier data center model, enables the consolidation of data center endpoints (such as servers, storage devices, memory, appliances, and routers), and provides better scaling and network virtualization capabilities than traditional data centers. A QFX3000 QFabric switch is a single, nonblocking, low-latency switch that supports thousands of 10-Gigabit Ethernet ports or 2-Gbps, 4-Gbps, or 8-Gbps Fibre Channel ports to interconnect servers, storage, and the Internet across a high-speed, high-performance fabric. The devices used to build a QFabric switch include the QFX3008 Interconnect device, the QFX3100 Director device, and the QFX3500 Node device.
- **QFX3008 Interconnect device**—A QFabric switch device that acts like a backplane for data plane traffic traversing the QFX3000 QFabric switch between Node devices. The QFX3008 Interconnect device has 8 slots that house 16 quad small form-factor pluggable plus (QSFP+) ports per slot, for a total of 128 40-Gbps data plane ports per chassis.
- **QFX3100 Director device**—A QFabric switch hardware component that processes fundamental QFabric switch applications and services, such as startup, configuration, maintenance, and communication among QFabric switch component devices. Two enhanced Director devices with hard drives are joined together to form a Director group (a required QFabric switch component) to provide shared memory, storage, and processing power. The Director group establishes, monitors, and maintains all components within the QFabric switch.

- **QFX3500 Node device**—A QFabric switch device that connects either to endpoint systems (such as servers and storage devices) or to external networks in a QFX3000 QFabric switch. It is packaged in an industry-standard 1 U, 19-inch rack-mount enclosure. The QFX3500 Node device provides up to 48 10-Gigabit Ethernet interfaces to connect to the endpoints. Twelve of these 48 interfaces can be configured to support 2-Gbps, 4-Gbps, or 8-Gbps Fibre Channel, and 36 of the interfaces can be configured to support Gigabit Ethernet. Also, there are four QSFP+ uplink connections to connect to the Interconnect devices in the QFX3000 QFabric switch.
- **Support for SFP (small form-factor pluggable) interface modules on management board interfaces (QFX3500 Node devices)**—Provides two management interfaces that support Gigabit Ethernet SFP modules.
- **Support for SFP network modules (QFX3100 Director devices)**—Provides four interfaces that support Gigabit Ethernet SFP modules.

## QFabric Switch Deployment

- **Converting the device mode (QFX3500 switches)**—Enables you to convert a QFX3500 switch to a QFX3500 Node device so it can be deployed within a QFabric switch. By default, QFX3500 switches operate in standalone mode. Before the switch can participate within a QFabric environment, you must upgrade its software and change the device mode for the switch to fabric mode.

To convert a QFX3500 switch from standalone mode to fabric mode:

1. Connect your management station to the console port of the switch.
2. Issue the **request chassis device-mode fabric** command:

```
user@switch> request chassis device-mode fabric
```



**NOTE:** If your QFX3500 switch is running Junos OS Release 11.1, you must perform Step 4 (software upgrade) before Step 2 and Step 3, and then reboot your switch after Step 3.

3. Verify the future device mode:

```
user@switch> show chassis device-mode
```

4. Install the **jinstall-qfx-11.3X30.14-domestic-signed.tgz** package on the switch and include the **reboot** option:

```
user@switch> request system software add validate reboot
source/jinstall-qfx-11.3X30.14-domestic-signed.tgz
```

The **jinstall** package can be downloaded from

<https://www.juniper.net/support/downloads/junos.html> (customers in the United States and Canada)

5. Connect the management ports of the switch (C0 and C1) to the QFabric control plane.
6. From your management network, open an SSH session to the default partition of your QFabric switch and log in.



**NOTE:** Converting the device mode erases the switch configuration. We recommend that you save your configuration to an external server or USB flash drive before executing the device mode conversion commands and rebooting the switch.

- **QFabric switch control plane Ethernet network (EX4200 switches acting as a Virtual Chassis to support the QFX3000 QFabric switch)**—Provides a separate control plane network within the QFabric switch to handle management traffic. This design enables the data plane network to focus on efficient, low-latency delivery of data, voice, and video traffic. The control plane uses two sets of four EX4200 switches configured as a Virtual Chassis to connect all components within the QFabric switch. The dual Virtual Chassis architecture provides redundancy and high availability to ensure reliable QFabric switch operation for the Director group, the Interconnect devices, and the Node devices. Full details about the control plane connections, cabling, topology, and configuration are beyond the scope of this document. See the QFabric control plane configuration example in the [QFabric Switches Deployment Guide](#) for more details.
- **QFabric switch data plane network (QFX3000 QFabric switches)**—Provides a separate network to handle rapid delivery of data plane traffic. The data plane uses QSFP+ interfaces and fiber-optic cabling to connect QFabric switch components at speeds of 40 Gbps. By creating a redundant set of connections between the Node devices and the backplane-like Interconnect devices, the data plane enables the Node devices to appear as if they were directly connected to one another in a single tier. To view the connection status of the QFabric switch data plane, issue the **show chassis fabric connectivity** command.
- **QFabric switch Director group (QFX3100 Director devices within a QFX3000 QFabric switch)**—Provides a redundant, resilient platform that manages the QFabric switch components. Two QFX3100 Director devices work together to ensure high availability of the system and load-balance system processes, such as the command-line interface (CLI) and shared storage. To configure the Director group for operation, install and cable two Director devices as a Director group, connect your management workstation to the console port of one of the Director devices, and perform the initial setup. The setup script starts automatically the first time you power on the Director devices. To monitor the status of the Director group, log in to the QFabric switch default partition and issue the **show fabric administration inventory director-group status** command. To view the serial number and QFabric switch identifier after the QFabric switch initial setup, issue the **show version** command.
- **Automatic detection and configuration of QFabric components (QFX3000 QFabric switches)**—Enable QFabric components to join the QFabric switch automatically. When you install the QFabric switch, activate the control plane and Director group, and power on the Node and Interconnect devices, the Director group recognizes these

devices, sends each device its own portion of the Junos OS configuration, and adds them to the QFabric switch inventory. By default, each individual Node device is placed into a unique server Node group that contains only that single Node device. No configuration is required for the default assignments.



**NOTE:** You can override the default settings when you add Node devices into a redundant server Node group (containing a pair of Node devices) or a network Node group (that can contain up to eight Node devices, run routing protocols, and connect to external networks).

- **QFabric switch Routing Engines (QFX3000 QFabric switches)**—Support the QFabric switch by providing virtual redundant instances of Junos OS that run on the Director group. The Routing Engines perform fabric management tasks, maintain control of the fabric, and host the operation of routing protocols for network Node groups. Because they are created in pairs, the Routing Engines provide additional high availability for the QFabric switch. No configuration is required. To view the status of the QFabric switch Routing Engines, issue the **show fabric administration inventory infrastructure** commands.
- **QFabric switch command-line interface (QFX3000 QFabric switches)**—Enables you to configure all components of the QFabric switch from a single location by using the Junos OS CLI. To access this central location, you need to log in to the QFabric switch default partition (an IP address you specify during the initial setup of the Director group).

Most existing Junos OS configuration statements and operational mode commands are supported (for example, statements and commands associated with interfaces, VLANs, protocols, and firewall filters).

To view QFabric switch components and check connectivity of the system, issue the **show fabric administration inventory** commands.

- **Alias configuration for Node devices (QFX3000 QFabric switches)**—Enables you to set user-defined aliases for QFabric switch Node devices to facilitate usability of the QFabric switch as it scales. Aliased names appear in the output of many QFabric switch operational commands, such as **show fabric administration inventory**. To map the serial number of a Node device to a user-defined name, include the **node-device node-device-name** statement at the **[edit fabric aliases]** hierarchy level and specify both the device ID and the preferred name.
- **Node group configuration (QFX3000 QFabric switches)**—Enables you to cluster several Node devices together to provide redundancy, resiliency, and high availability at the ingress and egress points of the QFabric switch. You can configure two types of Node groups:
  - **Redundant server Node group**—Enables the grouped Node devices to connect the QFabric switch to local servers and storage devices. A redundant server Node group can contain a maximum of two Node devices and supports LAG connections that can span both devices.

- **Network Node group**—Enables the grouped Node devices to connect the QFabric switch to external networks and run routing protocols such as BGP and OSPF. A network Node group can contain up to eight Node devices and supports LAG connections.



**NOTE:** When you configure routing protocols within the QFabric switch, you must use interfaces from the network Node group. If you try to configure routing protocols on server Node group interfaces, the configuration commit operation fails.

To configure a redundant server Node group, include two Node devices with the **node-device *node-device-name*** statement at the **[edit fabric resources node-group *node-group-name*]** hierarchy level. To configure a network Node group, include the **network-domain** statement at the **[edit fabric resources node-group NW-NG-0]** hierarchy level. In addition, include one to eight Node devices with the **node-device *node-device-name*** statement at the **[edit fabric resources node-group NW-NG-0]** hierarchy level.



**NOTE:** The network Node group name of NW-NG-0 is preset and must be used when you configure network Node group properties.

- **Operational mode command to remove Node devices (QFX3000 QFabric switches)**—Enables you to remove Node device entries from the QFabric switch inventory. When you physically remove a Node device from the QFabric switch, the system displays the missing Node device as **disconnected** in the output of the **show fabric administration inventory** command and expects you to reconnect the Node device shortly. However, if you intend to remove the Node device permanently, issue the **request fabric administration remove node-device *node-device*** command.
- **QFabric switch additions to chassis configuration statements and commands (QFX3000 QFabric switches)**—The Junos OS CLI now contains additional statements at the **[edit chassis]** hierarchy level that enable you to configure various options for your Interconnect devices, Node groups (network and server), and Node devices:
  - **interconnect-device**
  - **node-group**
  - **node-device**

The Junos OS CLI also contains additions to the existing chassis operational mode commands. These additions reflect new options resulting from the addition of the **interconnect-device**, **node-group**, and **node-device** chassis statements at the **[edit chassis]** hierarchy level.



The following chassis commands enable you to monitor and configure the entire QFabric switch or individual component devices as required:

- `clear chassis display message`
- `request chassis beacon`
- `request chassis cb`
- `request chassis fpc`
- `request chassis routing-engine master`
- `set chassis aggregated-devices`
- `set chassis alarm`
- `set chassis container-devices`
- `set chassis craft-lockout`
- `set chassis display`
- `set chassis fpc`
- `set chassis routing-engine`
- `show chassis alarms`
- `show chassis beacon`
- `show chassis environment`
- `show chassis fan`
- `show chassis firmware`
- `show chassis fpc`
- `show chassis hardware`
- `show chassis lcd`
- `show chassis led`
- `show chassis location`
- `show chassis mac-addresses`
- `show chassis pic`
- `show chassis routing-engine`
- `show chassis temperature-thresholds`
- `show chassis zones`

- **Software upgrade (QFX3000 QFabric switches)**—The QFabric switch software package contains software for all of the different devices in the QFabric switch, including the Director group, network and server Node groups, Interconnect devices, individual Node devices, and QFabric infrastructure. The **request system software download** command enables you to specify the location from where you want to obtain the software package—USB device, remote server, or FTP site—and to save the package locally on the shared storage of the Director group.

You can upgrade the software for the entire QFabric switch, the Director group, the fabric (Interconnect devices and QFabric infrastructure), or the network or server Node groups. You must reboot the software in order to activate it by either including the **reboot** option as part of the software package installation or issuing the **request system reboot component** command.

The following CLI commands enable you to add the software package to the entire QFabric switch or specified components:

- **request system software add component all**
- **request system software add component *component-name***
- **request system software add component director-group**
- **request system software add component fabric**

Additionally, you can back up your current QFabric switch configuration and installation-specific parameters using the **request system software configuration-backup** command. We recommend that you save this file to a USB device. You can also save this file locally or to an FTP site. After you create a configuration backup, you can restore it to your system with the **request system software configuration-restore** command.

The following commands enable you to reboot the entire QFabric switch or specified components:

- **request system reboot all**
- **request system reboot director-group**
- **request system reboot fabric**
- **request system reboot node-group**
- **Automatic software upgrade of QFabric components (QFX3000 QFabric switches)**—Devices in a QFabric switch try to synchronize their version of software to be on the same version if possible. When you upgrade your Director group to a new version of software, other QFabric components upgrade to the new version automatically when these devices reboot.

For example, if a master Control Board in an Interconnect device or a master Node device within a Node group has a previous version of software and reboots, it checks its software against the current version maintained by the Director group. If the software version is out of date for the rebooting device, the device downloads the new software automatically from the Director group, installs the new version, and reboots to activate the new software.

Similarly, if the backup Control Board in an Interconnect device or a secondary Node device within a Node group has a previous version of software and reboots, it checks its software against the current version maintained by the primary Control Board or master Node device, respectively. If the software version is out of date for the rebooting device, the device downloads the new software automatically from the master Control Board or Node device, installs the new version, and reboots to activate the new software.

- **Junos OS software recovery for the Director group (QFX3000 QFabric switches)**—Enables you to boot and reinstall software for the Director group from a USB device. This is especially useful in the event of disaster recovery. To recover the software for the QFabric switch, download the install media to a USB device, and then insert the USB device into the Director device and reboot the Director device. For more information, see [“Performing a QFabric System Recovery Installation on the Director Group” on page 47](#).
- **QFabric switch extensions to operational mode commands for file cleanup and core dumps (QFX3000 QFabric switches)**—Enable you to view core dumps and clean up outdated files in your QFabric switch. Files can be removed from the individual components or from the central storage repository located in the Director group. To view core dumps, issue the **show system core-dumps repository (core | log) component component-name** command. To clean up files stored on individual components, issue the **request system storage cleanup (director-group | infrastructure | interconnect-device | node-group) component component-name** command. To clean up files stored in the central repository located in the Director group, issue the **request system storage cleanup qfabric repository (core | log) component component-name** command.
- **User access classes for QFabric switch components (QFX3000 QFabric switches)**—Provide three levels of access privileges to components within a QFabric switch:
  - **qfabric-admin**—Provides the ability to log in to individual QFabric switch components and manage them. This class is equivalent to setting the following permissions: **clear**, **network**, **reset**, **trace**, **view**, and **maintenance**. To provide QFabric switch component-level login and management privileges, include the **qfabric-admin** statement at the **[edit system login user username authentication remote-debug-permission]** hierarchy level.
  - **qfabric-operator**—Provides the privilege to log in to individual QFabric switch components and view component operations and configurations. This class is equivalent to the preset Junos OS class of **read-only**. To provide QFabric switch component-level read-only access, include the **qfabric-operator** statement at the **[edit system login user username authentication remote-debug-permission]** hierarchy level.
  - **qfabric-user**—Prevents access to individual QFabric switch components. This class is the default setting for all QFabric switch users and is equivalent to the preset Junos OS class of **unauthorized**. To prevent a user from accessing individual QFabric switch components, include the **qfabric-user** statement at the **[edit system login user username authentication remote-debug-permission]** hierarchy level.

As part of the initial setup for the Director group, you must specify a username and password for QFabric components. Once configured, this information is stored in the

QFabric switch and used automatically when you log in to a component. To log in to a QFabric component, provide either read-only (**qfabric-operator**) or management (**qfabric-admin**) privileges to a user and issue the **request component login component-name** command.

- **License Management System (LMS) support for the QFabric switch MAC address block**—Provides an online portal to request and generate a unique group of MAC addresses for your QFabric system. The MAC address block must be entered in your QFabric switch as part of the initial setup procedure. For more information on the QFabric switch initial setup steps, see Performing the QFabric System Initial Setup on a QFX3100 Director Group.

To access the LMS system and generate a MAC address block, navigate to the [LMS Portal](#) and enter your Juniper Networks user ID and password. On the **Manage Product Licenses** page, select **QFX Series Product** from the pull-down menu and click the **Go** button. On the **Generate Licenses** page, select **QFX Series Product Fabric** and click on the **Continue** button. On the next page, enter your software serial number, QFabric system identifier, and authorization code, then click the **Download/E-mail MAC Address** button.

For more information about obtaining a QFabric switch MAC address block from the LMS portal, see <https://www.juniper.net/us/en/local/pdf/lms/9060069-en.pdf>.

- **Active and backup control plane LAG interfaces (QFX3100 Director devices)**—Provide a primary and secondary path to the QFabric switch control plane network from the Director device Ethernet port modules. With this enhancement, if the active primary LAG connection from the Director device (Module 0) to the control plane network fails, the backup LAG connection (Module 1) becomes active. No software configuration is required to enable this high availability feature, but you must follow the wiring diagram for your QFabric switch to ensure that both the primary and secondary LAG bundles are physically connected and properly wired.
- **Keepalive mechanism for QFabric switch devices (QFX3000 QFabric switches)**—Provides a method for the QFabric switch to detect a loss of connectivity between a QFabric component management port and the control plane network, and to switch the connection automatically to a backup management port for the affected component. No software configuration is required, and this high availability feature is enabled by default.

## Interfaces

- **Link aggregation (QFX3000 QFabric switches)**—Enables you to create link aggregation (LAG) bundles across Node devices in a redundant server Node group or a network Node group. You can include up to eight Ethernet interfaces in a LAG.

To configure a LAG, include the **device-count** statement at the **[edit chassis aggregated-devices ethernet]** hierarchy level. Additionally, include any options (for example, **minimum-links** and **link-speed**) at the **[edit interfaces interface-name aggregated-ether-options]** hierarchy level and the **802.3ad** statement at the **[edit interfaces interface-name ether-options]** hierarchy level. To configure LACP, include the **lacp** statement at the **[edit interfaces aggregated-interface-name aggregated-ether-options]** hierarchy level.

- **QSFP+ (quad small form-factor pluggable plus) interfaces (QFX3000 QFabric switches)**—Provide data plane uplink connections between your Node device and your Interconnect device. There are four 40-Gbps QSFP+ interfaces on a Node device.
- **QFabric switch data plane interface fault detection (QFX3000 QFabric switches)**—Provides a method for the QFabric switch to detect errors on QSFP+ interfaces that support the data plane network. No software configuration is required. To view QSFP+ interface errors (related to temperature, voltage, loss of signal, and cyclic redundancy check), review the system log or issue the **show interfaces diagnostics optics device-name:fte-fpc/pic/port** and **show interfaces device-name:fte-fpc/pic/port extensive** commands.

## Layer 2 Protocols

- **VLAN support (QFX3000 QFabric switches)**—Enables you to divide one physical broadcast domain into multiple virtual domains.
- **Link aggregation groups (LAGs) (QFX3000 QFabric switches)**—Enable you to use multiple network cables and ports in parallel to increase link speed and redundancy.
- **Dynamic Host Configuration Protocol relay agent (QFX3000 QFabric switches)**—Enables a switch to relay a DHCP request broadcast by a locally attached host to a DHCP server. To enable DHCP relay, include the **bootp** statement at the **[edit forwarding-options helpers]** hierarchy level and the **dhcp-option82** statement at the **[edit ethernet-switching-options secure-access-port vlan]** hierarchy level.
- **Link Layer Discovery Protocol (LLDP) (QFX3000 QFabric switches)**—Enables a switch to advertise its identity and capabilities on a LAN, as well as receive information about other network devices.
- **Jumbo frames on routed VLAN interfaces (RVIs) (QFX3000 QFabric switches)**—RVIs now support jumbo frames with a size of 9216 bytes.
- **MAC address move limiting (QFX3000 QFabric switches)**—You can use MAC move limiting to track the number of times a MAC address can move to a new interface (port). If a MAC address moves more than the configured number of times within 1 second, the switch performs the configured action. Using MAC move limiting can help to prevent MAC spoofing and can also detect and prevent loops. You can configure it to apply to all VLANs or to a specific VLAN.

## Layer 3 Protocols

- **Border Gateway Protocol (QFX3000 QFabric switches)**—Border Gateway Protocol (BGP) is an exterior gateway protocol (EGP) for routing traffic between autonomous systems (ASs). You configure BGP at the **[edit protocols bgp]** hierarchy level.
- **Open Shortest Path First (QFX3000 QFabric switches)**—The IPv4 Open Shortest Path First protocol is an interior gateway protocol (IGP) for routing traffic within an autonomous system (AS). QFX3000 QFabric switches support OSPFv1 and OSPFv2. You configure OSPF at the **[edit protocols ospf]** hierarchy level.
- **Virtual router routing instances (QFX3000 QFabric switches)**—Enable you to divide a QFabric switch into multiple independent virtual routers, each with its own routing

table. You can use virtual router routing instances to isolate customer traffic on your network without using multiple devices to segment your network. To configure virtual router routing instances, include the **virtual-router** statement at the **[edit routing-instances *instance-name* instance-type]** hierarchy level.

- **Routed VLAN interfaces (RVIs) (QFX3000 QFabric switches)**—Enable you to configure the QFabric switch to recognize which packets are being sent to local addresses so that they are bridged (switched) whenever possible and are routed between different VLANs only when needed. Whenever packets are switched instead of routed, several layers of processing are eliminated. Switching also reduces the number of address lookups.
- **Static routes (QFX3000 QFabric switches)**—Enable you to manually configure and enter routes directly into the routing table. You can configure static routes at the **[edit routing-options static]** hierarchy level.
- **Routing options**—Enable you to configure a variety of protocol-independent routing properties. You can configure routing options at the **[edit routing-options]** hierarchy level.

## Multicast Protocols

- **IGMP snooping (QFX3000 QFabric switches)**—Enables a QFabric switch to monitor the IGMP (Internet Group Management Protocol) traffic between hosts and multicast routers. The switch can use what it learns to forward multicast traffic to only those downstream interfaces that are connected to interested receivers. This conserves bandwidth that would otherwise have been used up by flooding the traffic to all of the downstream VLAN interfaces). You configure IGMP snooping at the **[edit protocols igmp-snooping]** hierarchy level.

## Network Management

- **Simple Network Management Protocol (SNMP) version 1 (v1) and v2c (QFX3000 QFabric switches)**—SNMP monitors network devices from a central location. The SNMP implementation on QFX3000 QFabric switches supports the basic SNMP architecture of Junos OS with some limitations, including a reduced set of Management Information Base (MIB) objects and read-only access for SNMP communities. You configure SNMP at the **[edit snmp]** hierarchy level. The **show snmp statistics** operational mode command is supported.
- **System log (syslog) messages (QFX3000 QFabric switches)**—The QFabric switch monitors events that occur on its component devices, distributes system log messages about those events to all external system log message servers (hosts) that are configured, and archives the messages. Component devices may include Node devices, Interconnect devices, Director devices, and the Virtual Chassis. You configure the handling of system log messages by using the **host** and **file** statements in the **[edit system syslog]** hierarchy level. Issue the **show log filename** operational mode command to view the messages.
- **Support for Junos Space (QFX3000 QFabric switches)**—The Juniper Networks Junos Space application running on a JA1500 appliance or a Junos Space Virtual Appliance is a comprehensive platform for building and deploying applications for collaboration,

productivity, and network infrastructure and operations management. Junos Space provides a runtime environment implemented as a fabric of virtual and physical appliances. The QFabric switch supports Junos Space applications such as the Network Application Platform, Ethernet Design, Service Now, Service Insight, and Virtual Control.

- **Advanced Insight Solutions (AIS) support (QFX3000 QFabric switches)**—AIS provides tools and processes to automate the delivery of support services for the QFabric switch. Key components are the AI-Scripts and Advanced Insight Manager (AIM). AIS provides reactive and proactive support by automatically detecting events (incidents) and intelligence information, managing incidents for quick resolution by Juniper Networks support, and providing intelligence information updates to prevent future incidents. Use the **request system scripts add** command to install the AI-Scripts package.

## Security

- **Role-based access control (QFX3000 QFabric switches)**—Role-based access control (RBAC) provides a system administrator the capability to restrict the workspaces a user can access, the system resources users can view and manage, and the tasks available to a user within a workspace.
- **Firewall filters (QFX3000 QFabric switches)**—Enable you to provide rules that define whether to accept or discard packets. You can use firewall filters on interfaces, VLANs, routed VLAN interfaces (RVIs), LAGs, and loopback interfaces. You configure firewall filters at the **[edit firewall]** hierarchy level.
- **Policing (QFX3000 QFabric switches)**—Enables you to use policing to apply limits to traffic flow and set consequences for packets that exceed those limits. To configure policers, include the **policer** and **three-color-policer** statements at the **[edit firewall]** hierarchy level.

## Services

- **Network Time Protocol (QFX3000 QFabric switches)**—Network Time Protocol (NTP) enables you to synchronize the time across a network. This is especially helpful for correlating log events and replicating databases and file systems. The QFabric switch synchronizes time with servers that are external to the network and operates in client mode only. To configure NTP, include the **server address** and **authentication-key** statements at the **[edit system ntp]** hierarchy level.
- **Port mirroring (QFX3000 QFabric switches)**—Enables you to configure the switch to send traffic to applications that analyze it for purposes such as monitoring compliance and enforcing policies. To configure port mirroring, include the **analyzer** statement at the **[edit ethernet-switching-options]** hierarchy level.
- **Static routes (QFX3000 QFabric switches)**—Enable you to manually configure and enter routes directly into the routing table.
- **Routed VLAN interfaces (QFX3000 QFabric switches)**—Enable you to forward packets between VLANs without using a router to connect the VLANs.

## Storage

- **Fibre Channel over Ethernet proxy gateway (QFX3000 QFabric switches)**—Enables you to connect FCoE hosts on an Ethernet network to a Fibre Channel forwarder (FCF) switch in a Fibre Channel storage area network (SAN) fabric.
- **FIP snooping (QFX3000 QFabric switches)**—Enables you to use the FIP snooping security feature to prevent man-in-the-middle attacks when the switch is being used as a Fibre Channel over Ethernet (FCoE) transit switch.
- **Transit switch (QFX3000 QFabric switches)**—Enables you to configure a QFX Series switch as an FCoE transit switch or as a Layer 2 data center bridging (DCB) switch that can transport FCoE frames, implement FCoE Initialization Protocol (FIP) snooping, and support the Converged Enhanced Ethernet (CEE) draft version of the Data Center Bridging and Exchange Capability (DCBX) protocol.

## Traffic Management

- **Interface-specific CoS rewrite rules (QFX3000 QFabric switches)**—Enable you to use rewrite rules to set the value of the CoS bits within a packet header, so you can alter the CoS settings of incoming packets.

### Related Documentation

- [Changes in Default Behavior and Syntax in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 16](#)
- [Limitations in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 18](#)
- [Outstanding Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 20](#)
- [Resolved Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 26](#)
- [Errata in Documentation for Junos OS Release 11.3 for QFX3000 QFabric Switches on page 37](#)
- [Upgrading Software on a QFabric System on page 40](#)
- [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)

## Changes in Default Behavior and Syntax in Junos OS Release 11.3 for QFX3000 QFabric Switches

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### QFabric Switch Administration

- **Changes to the QFX3000-G QFabric switch control plane network**—Provides more resiliency and better high availability for the QFabric switch than in the initial Junos OS 11.3X30.6 release. The highlights of the changes are:
  - Module 0 on both Director devices DG0 and DG1 connects to Virtual Chassis VCO (primary), whereas Module 1 on both DG0 and DG1 connects to VC1 (backup).
  - Ports 47 and 46 on the Virtual Chassis migrate to ports 40 and 41, respectively.



- For Node devices and Interconnect devices, a keepalive mechanism has been implemented so that control plane management port switchovers occurs only if the active management port is detected by the system to be unresponsive.
- For Director devices, the LAG bundles on both Module 0 and 1 are now operational with one module as primary (typically Module 0) and the second module as backup (typically Module 1).



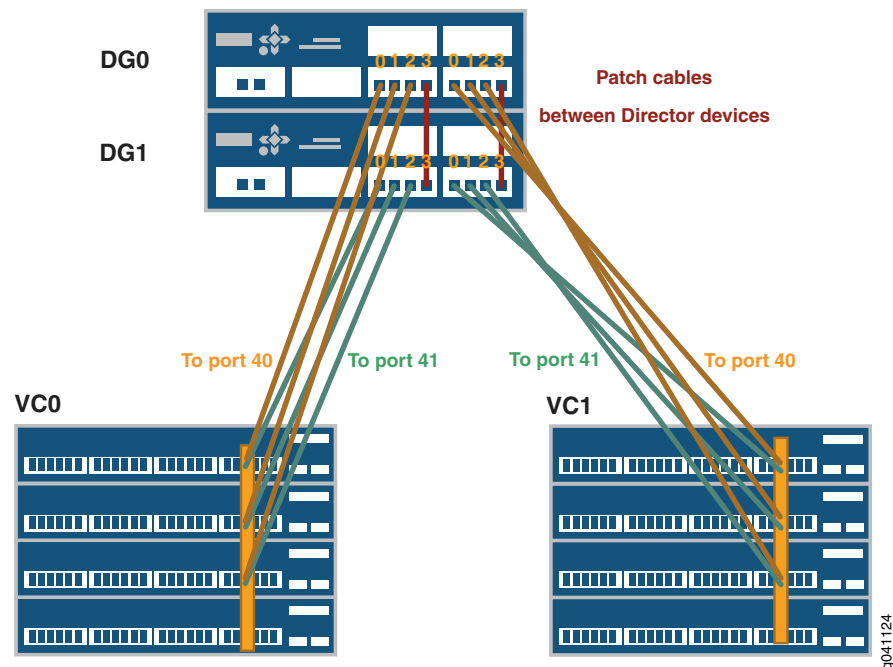
**NOTE:** Some wiring changes are required on DG1 to support this feature.

These enhancements eliminate a possible operational condition in which the inter-VC link fails and might cause disconnections from the Node and Interconnect devices.

To migrate your QFabric switch to the new wiring and supported software configuration, implement the following steps:

- Back up your current configuration and QFabric switch settings by issuing the **request system software configuration-backup** command in the QFabric CLI.
- Power off both the Director devices.
- Rewire the cable connections for the LAGs on DG1 to VC0 (Module 0) and VC1 (Module 1) in accordance with the new recommended wiring plan in [Figure 1 on page 17](#).

**Figure 1: QFabric Switch Control Plane—Director Device to Virtual Chassis Connections**



- Power on DG0 first, then DG1.

- Perform a software upgrade for the Director group, either through the USB method or with the **request system software download** and **request system software add** commands. This allows the backup LAG to become operational.
- Leave Port 3 of all Director group modules alone (this preserves the heartbeat keepalive and link between the Director devices in the Director group).
- The Node devices and Interconnect devices automatically upgrade to the new software when the Director has been upgraded.
- Download, customize, and commit the revised QFabric control plane network configuration available here:  
<https://download.juniper.net/software/junos/10.4R3.4/qfabric-cpe.cfg>.

**Related Documentation**

- New Features in Junos OS Release 11.3 for QFX3000 QFabric Switches
- Limitations in Junos OS Release 11.3 for QFX3000 QFabric Switches
- [Outstanding Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 20](#)
- [Resolved Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 26](#)
- [Errata in Documentation for Junos OS Release 11.3 for QFX3000 QFabric Switches on page 37](#)
- [Upgrading Software on a QFabric System on page 40](#)
- [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)

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## Limitations in Junos OS Release 11.3 for QFX3000 QFabric Switches

This section lists the limitations for QFX3000 QFabric switches in the current release.

### Network Management

Scalar variables in the Juniper Networks enterprise-specific SNMP MIBs capture variable information (such as memory usage) on network devices. On the QFabric switch, support for scalar variables is limited to the following objects in the Chassis MIB (**jnx-chassis.mib**):

- **jnxBoxClass**
- **jnxBoxDescr**
- **jnxBoxSerialNo**

### Storage

- A Fibre Channel fabric supports a maximum of four Fibre Channel over Ethernet (FCoE) VLANs.
- The maximum number of logins for each FCoE node (ENode) is a range of 32 through 2000 for trusted fabrics and 32 through 376 for untrusted fabrics. (Each ENode can log in to a particular fabric up to the maximum number of configured times. The

maximum number of logins is per-fabric, so an ENode can log in to more than one fabric and have its configured maximum number of logins on each fabric.)

- In transit switch mode (ports are not FCoE trusted), the maximum number of FCoE sessions (ENode to FCF sessions) that the QFX3500 switch or a QFabric node supports is 376 sessions. In FCoE-FC gateway mode, if you configure the local FC fabric on the switch as FCoE trusted, all of the ports in the local FC fabric are trusted. This reduces system overhead and increases the maximum number of supported FCoE sessions to:
  - QFX3500 switch: 2500 sessions at a rate of 100 logins per second.
  - QFX3000 QFabric switch server Node group: 2500 sessions per Node device at a rate of 100 logins per second.
  - QFX3000 QFabric switch redundant server Node group: 2500 sessions across all Node devices at a rate of 100 logins per second. Any Node device in a group can have up to 2500 FCoE sessions, but the total number of sessions in the group should not exceed 2500 sessions.
  - QFX3000 QFabric switch network Node group: 2500 sessions per Node device, with a maximum of 2500 sessions across all Node devices within a redundant network Node group, at a rate of 100 logins per second. Any Node device in a group can have up to 2500 FCoE sessions, but the total number of sessions in the group should not exceed 2500 sessions.
- When you configure FIP snooping filters, if the filters consume more space than is available in the ternary content-addressable memory (TCAM), the configuration commit operation succeeds even though the filters are not actually implemented in the configuration. Because the commit operation checks syntax but does not check available resources, it appears as if the FIP snooping filters are configured, but they are not. The only indication of this issue is that the switch generates a system log message that the TCAM is full. You must check the system log to find out if a TCAM full message has been logged if you suspect that the filters have not been implemented.
- You cannot use a fixed classifier to map FCoE traffic to an interface. The Fibre Channel over Ethernet (FCoE) application type, length, value (TLV) carries the FCoE priority-based flow control (PFC) information when you use an explicit IEEE 802.1p classifier to map FCoE traffic to an interface. You cannot use a fixed classifier to map FCoE traffic to an interface, because untagged traffic will be classified in the FCoE forwarding class, but FCoE traffic must have a priority tag (FCoE traffic cannot be untagged).

For example, the following configuration is supported:

**[edit class-of-service]**

```
user@switch# set congestion notification profile fcoe-cnp input ieee-802.1 code-point 011 pfc
```

```
user@switch# set interfaces xe-0/0/24 unit 0 classifiers ieee-802.1 fcoe
```

For example, the following fixed classifier configuration is not supported:

**[edit class-of-service]**

```
user@switch# set interfaces xe-0/0/24 unit 0 forwarding-class fcoe
```

## Traffic Management

- Classifiers are not supported on Layer 3 logical interfaces; therefore, classifiers cannot be applied to routed VLAN interfaces (RVI). You can apply classifiers to Layer 2 logical interfaces.

### Related Documentation

- [New Features in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 4](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 16](#)
- [Outstanding Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 20](#)
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- [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)

## Outstanding Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches

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The following issues are outstanding in Junos OS Release 11.3X30.14. The identifier following the description is the tracking number in our bug database.

For the latest, most complete information about outstanding and resolved issues with the Junos OS software, see the Juniper Networks online software defect search application at <http://www.juniper.net/prsearch>.

## Interfaces

- On a QFabric switch, pressing the Tab key to autocomplete an interface name might not work. As a workaround, type the entire name of the interface. [PR/564108]
- On a QFabric switch, interfaces on the Node devices assigned to the network Node group are the only interfaces that are allowed to be configured as L3 interfaces, which are configured using the **family inet address ip-address** statement at the **[edit interfaces interface-name unit logical-unit-number]** hierarchy level. However, even if you configure interfaces on the Node devices assigned to server Node groups as L3 interfaces, the commit operation does not fail. [PR/674010]
- On a QFabric switch, issuing the **show interfaces extensive** command for management interfaces incorrectly shows management interfaces as having never "flapped" (gone down and come back up) when they actually have. The **show interfaces extensive** command incorrectly shows **last-flapped: never** in the CLI output. [PR/724930]
- On a QFabric switch, if you enter a value higher than 255 when issuing the **set fabric-crc-error-rate-threshold** and **set fabric-crc-error-iteration-count** commands, the value is capped at 255. [PR/724954]

- On a QFabric switch, if you enter a value of zero when issuing the **set fabric-crc-error-rate-threshold** and **set fabric-crc-error-iteration-count** commands, the values are reset to the default values instead. [PR/724955]
- On a QFabric switch, if you reboot or hot swap an FPC module in an Interconnect device, the module might lose its configured CRC error threshold and iteration count values, and reset to default values. [PR/725232]

## Junos OS Basics

- On a QFabric switch, in very rare cases, after you install the software from the install media on a USB device, the switch might fail to boot, and the error message **switchroot: mount failed: No such file or directory** appears. As a workaround, reboot the Director device. [PR/664511]
- On a QFabric switch, the output of the **help reference** and **help topic** commands contains the following errors:
  - The Syntax and Related Topics fields contain extraneous bracketed numbers, such as [1].
  - A References field appears, which should not be there.

[PR/687527]

- On a QFabric switch, deleting individual child members from a link aggregation group (LAG) might reset the aggregated Ethernet interface traffic counters. [PR/700039]
- On a QFabric switch, in certain scaling and stress scenarios, issuing the **clear ethernet switching table** command might cause the transmission of messages between software entities to fail. When this happens, a temporary mismatch in MAC learning states between hardware and software components occurs, and the system generates the following error messages:

[Tue Dec 20 14:18:56 2011 LOG: Err] pfeman\_msg2sfi: error (16) in ipc\_pipe\_write.

[Tue Dec 20 14:18:56 2011 LOG: Err] pfeman\_msg2sfi\_fdb\_mac\_del failed, Error(16) in sending msg2sfi.

[PR/723334]

- On a QFabric switch, the **show pfe statistics traffic** command does not report normal traffic discard. [PR/736966]

## Layer 2 and Layer 3 Protocols

- If you take two 16-port QSFP+ front cards offline on a QFX3008 Interconnect device, traffic loss might occur for up to 6 seconds on the QFabric switch. [PR/691523]
- On a QFabric switch, momentary loss of Layer 2 multicast traffic might occur when you reboot the backup network Node group. [PR/691729]
- On a QFabric switch, momentary loss of Layer 2 multicast traffic might occur when you reboot the fabric manager Routing Engine. [PR/692006]

- If you remove a front card from a QFX3008 Interconnect device, there might be a brief loss of traffic. [PR/693084]
- On a QFabric switch, the output of the **show vlans summary** command indicates that the default VLAN is a configured VLAN instead of an internal VLAN. [PR/739204]

## Network Management

- On a QFabric switch, the system log messages file might contain a large amount of data, which affects the time required to process the output for the **show log** command. As a workaround, to reduce the time needed to generate the output, configure the **facility** and **severity** options at the **[edit system syslog file filename]** hierarchy level to include only those messages that you want to display. [PR/681413]
- On a QFabric switch, configuration of source addresses in outbound SNMP traps and TACACS+ authentication requests is not supported. The source address in the UDP header of an SNMP trap and the source address in the TCP header of a TACACS+ authentication request are each set to the default IP address that is bound by the socket. [PR/700194]
- On a QFabric switch, support for the system log (syslog) configuration is limited. You cannot configure a filename using the **file filename** statement at the **[edit system syslog]** hierarchy level. In addition, you cannot configure the **archive size** or **time-format milliseconds** statements at the **[edit system syslog file]** hierarchy level. [PR/726727]
- On a QFabric switch, the following items related to system log messages have limited support:
  - Time resolution is supported in seconds, so millisecond data is not available. If you attempt to configure millisecond support, the Milliseconds field in the log file displays **000**.
  - The **messages** file is configured implicitly as **any any** with a file size of 100 MB.
  - Command completion does not work for the **messages** file.

The following items are not supported:

- Archiving of syslog messages
- Structured syslog
- Monitoring of syslog files
- File access to syslog messages

[PR/743786]

## Platform and Infrastructure

- On a QFabric switch, the LED display on the Director device does not show the name shown in the CLI. [PR/709261]
- On a QFabric switch, wildcard support is only available starting at the third level in a four-level fabric interface name. For example, issuing the **show interfaces qfx3500-9:xe\***

**fabric statistics** command does not work, but issuing the **show interfaces qfx3500-9:xe-0/\* fabric statistics** command does. [PR/719292]

- On a QFabric switch, the output displayed for the **show arp expiration-time** command may not be properly formatted. The indentation of the last column is aligned incorrectly. [PR/737585]

## QFabric Switch Administration

- On a QFabric switch, when you create a redundant server Node group and then delete the master Node device, sometimes the reconnection process to the new master Node device Routing Engine might make it seem as if some of the completed next-hop deletions appear as new deletions. Because the deletions have already occurred, you can ignore error messages such as **Wed Aug 17 19:47:34 2011 LOG: Err] NH: Failed to find nh (375) for deletion.** [PR/681837]
- On a QFabric switch, the **disable** statement for aggregated Ethernet interfaces might not be visible as a help option or available for autocompletion at the **[edit interfaces device-name:ae0 unit 0]** hierarchy level. However, even though the statement is hidden, you can still disable aggregated Ethernet interfaces by issuing the full **disable** statement at this same hierarchy level. [PR/685964]
- On a QFabric switch, in some cases after you perform a rolling software upgrade and attempt to log in to the default partition, the login attempt might fail and you might see error messages saying **WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!**. As a workaround, clear the `~/.ssh/known_hosts` file (indicated by the error message) on your management station and reattempt the login. [PR/687133]
- On a QFabric switch, after you enter IP addresses for the Director devices and the default partition as part of the initial setup procedure, you might not be able to view this information from the QFabric switch CLI. [PR/692180]
- On a QFabric switch, if a Director device is not listed in the output of the **show fabric administration inventory** command, the device might not be operational. [PR/697626]
- On a QFabric switch, when you issue the **request component login** command to access one of the QFabric infrastructure Routing Engines, you might see incorrect names for the Routing Engines as you enter or exit the component. [PR/702622]
- On a QFabric switch, if you configure an alias name for a Node device, and configure the serial number of the Node device when adding it into a Node group, and then try to remove the Node device from the Node group by specifying the aliased name, the removal is unsuccessful. As a workaround, issue the **show fabric resources node-group group-name** configuration mode command to view your original configuration, and then use the same alias name or serial number that you used when the Node device was added when you delete the Node device from the Node group. [PR/705888]
- On a QFabric switch, the only notification of which Director device is hosting your default partition CLI session appears during the initial login:

```
Juniper QFabric Director 11.3.5593 2011-11-14 19:24:02 UTC
RUNNING ON DIRECTOR DEVICE : dg0
root@qfabric>
```

There is no operational mode command to view this information. [PR/706033]

- On a QFabric switch, you cannot issue an operational mode command to identify the master network Node group Routing Engine and the Director device that is hosting it. [PR/706037]
- On a QFabric switch, if you issue the **show | compare | display inheritance** configuration mode command, the output might display an error message. [PR/706924]
- On a QFabric switch, if the backup Control Board in an Interconnect device is disconnected and you issue the **request chassis routing-engine master switch interconnect-device device-name** command, the mastership switchover might be executed in error. To prevent this situation, issue the **show fabric administration inventory** command to verify that the backup Control Board is in the **Connected** state before you issue the switchover command. [PR/708832]
- On a QFabric switch, if you issue the **show fabric inventory node-devices** command, the resulting output might not show the status of the **Configuration** field. [PR/717082]
- On a QFabric switch, if you issue the **show vlans summary** command, the output might show an incorrect value for the Configured VLANs field (because the **default** VLAN might be counted incorrectly as part of the list of Configured VLANs). [PR/722004]
- On a QFabric switch, if you try to use a wildcard (\*) when you issue the **show interfaces** or **show interfaces fabric** commands, the command output returns no results. As a workaround, include the wildcard after the partial name for the network Node group and use grep to filter the results (such as **show interfaces fabric NW\* terse | grep node2**) or issue the commands by using the full device name without the wildcard (such as **show interfaces fabric node2:xe-0/1/0 terse**). [PR/734244]
- On a QFabric switch, if you issue the **request fabric administration director-group change-master** command to change mastership within the Director group, and then issue the **show system core-dumps** command on the new master Director device, the resulting output might not display the QFabric component inventory properly. As a workaround, wait a few minutes for the mastership change to settle and then reissue the **show system core-dumps** command. [PR/735549]
- On a QFabric switch, archiving of system logs is not supported. If you issue the **clear log messages all** command, the command does not work and the logs are not cleared from the QFabric switch devices (Node and Interconnect devices). However, the system automatically purges these messages. [PR/736238]
- On a QFabric switch, if you issue the **show fabric administration system mac-pool** command, the output might not display the correct values for the available MAC address blocks. However, there is no adverse operational impact on the QFabric switch. [PR/738645]
- On a QFabric switch, when you issue the **show bgp summary** command, the output might show an internal name for the BGP group rather than the external name. (The external name is the displayed name without the "---qfabric" tag.) [PR/739290]
- On a QFabric switch, if you modify statements at the **[edit interfaces interface-name unit logical-unit-number family ethernet-switching]** hierarchy level (for example, modifying a VLAN range), in some cases there might be a vague QFabric CLI console error message that says **Check-out failed for Ethernet Switching Process (/usr/sbin/eswd) without details**. [PR/741268]



- On a QFabric switch, the **show interfaces snmp-index** operational mode command does not display any output. [PR/741780]
- On a QFabric switch, the **set date** command is visible, but not supported. [PR/742738]
- On a QFabric switch, if you include special characters (such as **^**, **&**, or **#**) in a policy name and apply the policy to your configuration (for example, including the **import test^character** statement at the **[edit protocols bgp]** hierarchy level), the commit operation might fail. [PR/743838]
- On a QFabric switch, if you issue the **show igmp-snooping membership detail interface interface-name** command, the QFabric device name or serial number might be missing from the four-level interface name displayed in the output. [PR/744200]
- On a QFabric switch, for Junos Script clients and clients that require XML output, the **show igmp-snooping-membership-detail** operational mode command returns invalid XML output in the form of multiple close tags for **igmp-snooping-group-vlan**. [PR/744227]
- On a QFabric switch, comment lines (including lines with the **#** pound symbol as the first character) are not supported in the traceoptions configuration patch file. Delete all comment lines before sending the patch file to QFabric devices. [PR/744560]
- On a QFabric switch, traceoptions are not supported. [PR/744564]
- On a QFabric switch, if you try to set a Node group name that is the same as an existing alias name for a Node device, the configuration commit operation fails. As a workaround, rename either the Node device alias name or the Node group name to ensure that each name is unique. [PR/744922]
- On a QFabric switch, for Junos Script clients and clients that require XML output, the XML output of the **show fabric administration inventory infrastructure | display xml** command is not valid. The invalid output does not affect QFabric switch operation. [PR/745282]
- On a QFabric switch, the **show system core-dumps component** operational mode command does not work if the specified component is either **dg0** or **dg1**. [PR/745293]
- On a QFabric switch, commit check errors may appear on screen in the internal system format instead of in the CLI configuration hierarchy format. [PR/745824]
- On a QFabric switch, an intermittent failure during a configuration commit operation could cause the commit operation to fail. Such failure can also occur when you reboot a Director device. As a workaround, reboot the Director device on which the commit operations are failing. [PR/745853]

## Security

- On a QFabric switch, if you configure a tricolor policer and then enter the **show firewall** command, you might see the error message **## invalid path element 'loss-priority'**. This message is erroneous, and you can safely ignore it. [PR/598269]
- On a QFabric switch, if you configure a firewall filter at the **[edit firewall family ethernet-switching]** hierarchy level and apply the filter to a routed VLAN interface (RVI), the switch erroneously allows the configuration to be committed. [PR/677381]

- On a QFabric switch, you cannot deactivate individual match conditions in a firewall filter term. For example, the following statement is not allowed: **deactivate firewall family inet filter *filter-name* term *term-name* from *match-condition*.** [PR/679771]
- On a QFabric switch, you cannot include the **loss-priority** and the **policer** actions in the same firewall filter term. If you do so, you see the following error message when you attempt to commit the configuration: **cannot support policer action if loss-priority is configured.** [PR/685580]

## Storage

- On a QFabric switch, DCBX is required on Ethernet interfaces for FCoE, ETS, and other features to function properly. However, DCBX is not enabled by default on all Ethernet interfaces, so some of these features might not work properly. As a workaround, enable DCBX on all interfaces by including the **interface all** statement at the **[edit protocols dcbx]** hierarchy level. [PR/709685]

## User Interface and Configuration

- On a QFabric switch, if you establish multiple, long-running configuration edit sessions, then issue commands that force a configuration synchronization (such as **show configuration**, **update**, and **commit**) and issue a **commit** command with no changes, you might see an error message that says **warning: no private changes to commit** and your new active configuration might include some changes made by other users. [PR/736596]

### Related Documentation

- [New Features in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 4](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 16](#)
- [Limitations in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 18](#)
- [Resolved Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 26](#)
- [Errata in Documentation for Junos OS Release 11.3 for QFX3000 QFabric Switches on page 37](#)
- [Upgrading Software on a QFabric System on page 40](#)
- [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)

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## Resolved Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches

The following issues have been resolved in Junos OS Release 11.3 in the specified maintenance releases listed in this topic.

For the latest, most complete information about outstanding and resolved issues with the Junos OS software, see the Juniper Networks online software defect search application at <http://www.juniper.net/prsearch>.

## Issues Resolved in Release 11.3X30.14

The following issues have been resolved since Junos OS Release 11.3X30.10. The identifier following the description is the tracking number in our bug database.

### Interfaces and Chassis

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- On a QFabric switch, if you configure a static ARP entry for a MAC address that is not static and move it from one Node device to another, the Node devices might display an inconsistent state for the ARP route. [PR/568835: This issue has been resolved.]
- On a QFabric switch, if you upgrade the switch to Junos OS Release 11.3X30.10, response times for SNMP might be slower than in previous releases. [PR/751698: This issue has been resolved.]
- On a QFabric switch, if a Node device in the network Node group loses its TCP/IP session with the FM-0 fabric manager Routing Engine, processing for some of the private routing instances might become corrupted. [PR/793576: This issue has been resolved.]

### Network Management and Monitoring

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- On a QFabric switch, if an SNMP proxy request received by a server Node group times out, the asynchronous context object might be freed twice, which sometimes might result in memory corruption and high CPU usage. [PR/781307: This issue has been resolved.]

### QFabric Switches

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- On a QFabric switch, the behavior of the **ping** operational mode command is different from the behavior of the same command on a standalone device running Junos OS. From the QFabric CLI, the command does not display continuous results and only provides the result of the complete ping operation. [PR/672624: This issue has been resolved.]
- On a QFabric switch, you cannot perform a rolling software upgrade on more than one device type simultaneously through multiple login sessions. [PR/676216: This issue has been resolved.]
- On a QFabric switch, if you issue the **show igmp-snooping membership** command, the switch might not execute the command properly, the CLI session stalls, and no output is displayed. [PR/734299: This issue has been resolved.]
- On a QFabric switch, if you reboot both Director devices in a Director group, you might not be able to log in to the default partition QFabric CLI. [PR/734594: This issue has been resolved.]

### Routing Protocols

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- On a QFabric switch, if you upgrade to Junos OS Release 11.3X30.10, a firewall filter applied to the loopback interface might block DHCP discover packets. [PR/756151: This issue has been resolved.]

- On a QFabric switch, if you clear the Ethernet switching table, some traffic might not be flooded into the VLAN, and the switching table might not relearn some of the previously known MAC addresses. [PR/786434: This issue has been resolved.]

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### User Interface and Configuration

- On a QFabric switch, you cannot issue the **clear firewall counters** operational mode command for interface specific filters. [PR/688263: This issue has been resolved.]
- On a QFabric switch, if an FPC number changes for a Node device within a network Node group, a LAG referencing the Node device might retain the old FPC number and prevent the LAG from being established. [PR/745009: This issue has been resolved.]

## Issues Resolved in Release 11.3X30.10

The following issues have been resolved since Junos OS Release 11.3X30.9. The identifier following the description is the tracking number in our bug database.

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### Interfaces

- On a QFabric switch, restoring the control plane link between the network Node group line card and the Virtual Chassis causes the aggregated Ethernet interfaces on the network Node group line card to go up and down. This causes traffic loss in the range of milliseconds. [PR/693537: This issue has been resolved.]
- On a QFabric switch, when the Director devices are rebooted, the server ports of a Network node group server go up and down. This might result in traffic loss up to 30 seconds. [PR/697659: This issue has been resolved.]

---

### Layer 2 and Layer 3 Protocols

- On a QFabric switch, if you issue the **request chassis routing-engine master switch** command to force a mastership change on a server Node group, Layer Two traffic is interrupted for a brief time, possibly for as long as 23 seconds. [PR/695915: This issue has been resolved.]
- On a QFX Series switch, if VLAN range configuration is converted to individual VLAN configuration and vice versa, traffic is dropped on the VLAN with the lowest VLAN ID (VLAN tag) in the range. To prevent this problem, delete and re-create the complete VLAN range configuration. [PR/706119: This issue has been resolved.]

## Platform and Infrastructure

---

- On a QFabric switch, when you include the **port-error-disable** statement at the **[edit ethernet-switching-options]** hierarchy level, the configuration commit operation does not succeed on Node devices. [PR/705866: This issue has been resolved.]

## QFabric Switch Administration

---

- On a QFabric switch, a commit operation may sometimes return the following message, **warning: Unexpected failure as a result of commit**. This is only a warning message that is displayed even when the commit is successful. You can verify whether the commit operation was successful by inspecting the output of the **show | compare** command while in configuration mode. [PR/605569: This issue has been resolved.]
- On a QFabric switch, after an initial installation, two rollback files are created by “root via other”. The older of the two rollback files is not usable. When you attempt a rollback operation using this file, the following error message is displayed, **error: no action - rollback configuration was empty**. If this happens, use the other rollback file. [PR/608207: This issue has been resolved.]
- On a QFabric switch, if you attempt to log in to the default partition, and if the management interface (eth0) of one of the QFX3100 Director devices is not working, the Director group might not redirect the login attempt to the management interface of the other Director device. As a result, access to the Junos OS CLI on the QFabric switch might not be available. [PR/663139: This issue has been resolved.]
- On a QFabric switch, when multiple users open SSH sessions to connect to the default partition, enter configuration mode, and then simultaneously modify and commit their configurations, the users might see merge error messages. Because the default QFabric configuration mode is “edit private”, each user's private copy needs to be merged with commits from the other “edit private” sessions. As a workaround, issue the **update** and **show | compare** commands to ensure that the current configuration modifications still make sense prior to issuing a commit command. [PR/677462: This issue has been resolved.]
- If you configure a firewall filter on a QFabric switch and include a **tcp-flag** match condition, make sure to use all lowercase letters to spell the flag that you want the filter to check for. For example, enter “ack” (not “ACK”) or “syn” (not “SYN”). If you do not use all lowercase letters for the flag, the filter and anything else that you configure are rejected when you try to commit the configuration. [PR/687463: This issue has been resolved.]
- On a QFabric switch, if the network Node group Routing Engine stops working, server Node group traffic to dynamically learned Layer 2 multicast routes (through IGMP snooping) might be affected for up to 2 minutes. [PR/692379: This issue has been resolved.]
- On a QFabric switch, when a link failure occurs on the Director device, a system log message is generated by the compute node monitor (cn\_monitor) software, but no SNMP traps are issued for this event. [PR/700187: This issue has been resolved.]

- On a QFabric switch, when you power on the Director group and there is a loss of connectivity, in some cases the backup fabric control Routing Engine (FC-1) and network Node group Routing Engine might not start and the primary fabric control Routing Engine (FC-0) might be listed as **Disconnected** in the output of the **show fabric administration inventory** command. [PR/701792: This issue has been resolved.]
- On a QFabric switch, if you issue the **show fabric administration inventory** command, in some cases the output incorrectly displays inoperational components (such as the fabric manager and fabric control Routing Engines) as **Connected**. [PR/703036: This issue has been resolved.]
- On a QFabric switch, when you attempt to commit a configuration containing a VLAN range with 4079 or more VLANs, the commit operation fails with the following error message: **could not allocate internal resources: insufficient resources available**. [PR/703049: This issue has been resolved.]
- On a QFabric switch, if you issue the **request system reboot node-group** command, in rare cases the operation might display success even though the Node group devices have not rebooted. [PR/706670: This issue has been resolved.]
- On a QFabric switch, if you configure a redundant server Node group with a faulty configuration, the commit operation might still succeed. As a workaround, verify any failures by issuing the **show fabric administration inventory** command and check the output for any **Failed (invalid configuration)** error messages related to the redundant server Node group. [PR/706960: This issue has been resolved.]
- On a QFabric switch, if you configure the wrong TACACS+ server by mistake, the timeout period to reject a user is longer than expected. [PR/707000: This issue has been resolved.]
- On a QFabric switch, if a master Node device in a redundant server Node group reboots, in some cases interfaces might transition down and up on the backup Node device. [PR/709255: This issue has been resolved.]
- On a QFabric switch, if you configure a large value (such as 90000) for the **mac-table-aging-time** statement at the **[edit ethernet-switching-options]** hierarchy level, the output of the **show ethernet-switching table** command does not display the timer correctly. [PR/709544: This issue has been resolved.]
- On a QFabric switch, if you configure both flow control and priority-based flow control (PFC), the commit check fails as expected. However, if you then roll back your configuration and delete hierarchy levels related to this unsupported combination (such as **[edit interfaces]**), the commit check operation continues to fail even though it should succeed. [PR/738312: This issue has been resolved.]

---

## Storage

- On a QFabric switch configured for FCoE, if you connect a converged network adapter (CNA) to a redundant server Node group and then perform the following actions, the QFabric switch CLI might display misleading information.

1. You connect the network Node group to a QFX3500 standalone switch that is external to the QFabric switch and is serving as an FCoE-to-FC gateway.
2. You disable the CNA interface.
3. You clear all FIP snooping statistics.
4. You reenables the CNA interface.
5. You verify the FIP snooping statistics. The statistics displayed by the QFabric switch CLI might indicate the appearance of two UDA (unicast discovery advertisement) frames even though only one is transmitted by the gateway.

[PR/706989: This issue has been resolved.]

- On a QFabric switch, the direct attach copper (DAC) interface does not come up when a DAC cable is attached to interfaces 0 through 5 or to interfaces 42 through 47, regardless of whether the interfaces are in 10-Gigabit Ethernet mode or in native Fibre Channel mode. [PR/732515: This issue has been resolved.]

## Issues Resolved in Release 11.3X30.9

The following issues have been resolved since Junos OS Release 11.3X30.6. The identifier following the description is the tracking number in our bug database.

### Hardware

---

- On a QFabric switch, if you remove a 16-port QSFP+ front card in an Interconnect device and quickly (within approximately 20 seconds) insert it back into the device, the State field in the output of the **show chassis fpc** command might be **Offline** instead of **Online**. As a workaround, issue the **request chassis fpc slot slot-number online** command for the front card. [PR/671261: This issue has been resolved.]

### Interfaces

---

- On a QFabric switch, the statements **10m**, **100m**, and **automatic** are not supported at the **[edit interfaces interface-name ether-options auto-negotiation speed]** or **[edit interfaces interface-name ether-options flow-control speed]** hierarchy levels, and the statements **half-duplex** and **automatic** are not supported at the **[edit interfaces interface-name ether-options link-mode]** hierarchy level. [PR/571192: This issue has been resolved.]
- On a QFabric switch, you might experience a delay of up to 1 minute before you see the output of the **show interfaces** command. As a workaround, you can minimize this delay by reducing the scope of the interfaces that you specify—for example, issue the **show interfaces node-name:xe\*** command to view all of the 10-Gigabit interfaces on the specified Node device. [PR/666605: This issue has been resolved.]
- On a QFabric switch, if the transmit laser of a member link of a LAG interface goes down or becomes physically disconnected, traffic on the entire LAG might be dropped

temporarily (usually no more than a minute or two). [PR/684283: This issue has been resolved.]

- On a QFabric switch, if you issue the **show interfaces *interface-name* extensive** command to display information about an aggregated Ethernet interface in a network Node group—for example, **show interfaces NW-NG-0:ae2 extensive**—the output does not display the fully qualified interface name, which should include the Node device name. [PR/686353: This issue has been resolved.]

## Junos OS Basics

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- If you are upgrading the entire QFabric switch software one device at a time, you cannot reboot a device from another login session before the software installation for that device is complete. In this case, we recommend that you perform the software upgrade as follows:

1. **[edit]**

```
user@switch> request system software add package-name component director-group  
reboot
```

Wait for the Director group to complete the installation and then reboot before proceeding.

2. **[edit]**

```
user@switch> request system software add package-name component fabric
```

3. **[edit]**

```
user@switch> request system reboot fabric graceful
```

Wait for the Interconnect devices to complete the installation and the reboot and to become connected before proceeding.

4. **[edit]**

```
user@switch> request system software add package-name component node-group  
node-group-name reboot
```

Issue this command for each server Node group and network Node group in the QFabric switch.

[PR/666020: This issue has been resolved.]

- On a QFabric switch, the port labeled **MGMT** on each Control Board in an Interconnect device is reserved for future use. If an Interconnect device boots without a connection on the port labeled **MGMT** on either of its two Control Boards, the alarm **interconnect-device-name me1 : Ethernet Link Down** is displayed when you issue the **show system alarms** command. [PR/674995: This issue has been resolved.]
- On a QFabric switch, the following operational mode commands are visible in the CLI but not supported:
  - **show spanning-tree**
  - **show link-management**

[PR/680935: This issue has been resolved.]



- On a QFabric switch, the following configuration statements are visible at the **[edit]** hierarchy level in the CLI but not supported:

- **access-profile**
- **diameter**
- **dynamic-profiles**
- **jsrc-partition**

[PR/681062: This issue has been resolved.]

- On a QFabric switch, the **show pfe** operational mode command is visible in the CLI but not supported. [PR/681423: This issue has been resolved.]
- On a QFabric switch, the following configuration statements are visible in the CLI but not supported:

- **bootp** at the **[edit forwarding-options helpers]** hierarchy level
- **mstp** at the **[edit protocols]** hierarchy level
- **rstp** at the **[edit protocols]** hierarchy level
- **stp** at the **[edit protocols]** hierarchy level
- **vstp** at the **[edit protocols]** hierarchy level

On a QFabric switch, the following operational mode commands are visible in the CLI but not supported:

- **request system shutdown**
- **show bfd**
- **show dhcp**
- **show isis**
- **show rip**
- **show ripng**
- **show rsvp**

[PR/681578: This issue has been resolved.]

- On a QFabric switch, the following operational mode commands are visible in the CLI but not supported:
- **restart pgm**
- **show mld**
- **show msdp**
- **show pim**

[PR/681879: This issue has been resolved.]

- On a QFabric switch, the following operational mode commands are visible in the CLI but not supported:
  - **show accounting**
  - **show ancp**
  - **show diameter**
  - **show esis**
  - **show helper**
  - **show subscribers**
  - **show ted**

[PR/682322: This issue has been resolved.]

- On a QFabric switch, the only **path** option that works in the **request system software download path** command is **scp**. [PR/682381: This issue has been resolved.]
- On a QFabric switch, the **ethernet-switching-options secure-access-port vlan *vlan-name* mac-move-limit** statement is not supported. [PR/685996: This issue has been resolved.]
- On a QFabric switch, the hostname of the switch provided through LLDP is **qfabric** instead of the configured hostname. [PR/686282: This issue has been resolved.]

## Layer 2 and Layer 3 Protocols

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- On a QFabric switch, Layer 2 known unicast traffic takes a significant amount of time to converge after you issue the **clear ethernet-switching table** command on a network Node group or on a redundant server Node group when a large number (tens of thousands) of MAC addresses are present. [PR/679396: This issue has been resolved.]
- On a QFabric switch, if you configure a routed VLAN interface (RVI) with Layer 3 interfaces in two different server Node groups and one of the Layer 3 interfaces is down, the CLI reports that the other Layer 3 interface is down. In this case, the failure of the Layer 3 interface on one Node device does not cause the other Layer 3 interface in the RVI to fail. [PR/682171: This issue has been resolved.]
- On a QFabric switch, if you configure a routed VLAN interface (RVI) that exists on two or more Node devices in a network Node group and also configure per-packet load balancing (ECMP), a problem occurs if one of the Node devices fails or is rebooted. In this case, traffic flowing through the RVI on the failed device is dropped instead of being forwarded by the RVI on the remaining device. When the failed or rebooted device returns to service, normal forwarding resumes. [PR/684809: This issue has been resolved.]

## Multicast

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- On a QFabric switch, if an IGMP join or leave is sent into a VLAN that is configured on multiple Node devices, traffic for the multicast group that is being joined or left might

be dropped for as long as 3 seconds on other interfaces that belong to that VLAN and are connected to other members of the group. [PR/684808: This issue has been resolved.]

- On a QFabric switch, you cannot configure static IGMP snooping entries (statically define multicast groups) on interfaces assigned to the default VLAN. [PR/686677: This issue has been resolved.]

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## Network Management

- On a QFabric switch, when an interface in a Node group is enabled or disabled, the interface name displayed in the generated SNMP trap is different from the interface name that is displayed by an SNMP client `snmpwalk` request. [PR/604926: This issue has been resolved.]
- On a QFabric switch, system log messages displayed on the Director group might contain information about events that occurred on different Node devices in the QFabric switch. Because all syslog messages display the same prefix, it is difficult to determine on which Node devices the events occurred. [PR/666917: This issue has been resolved.]

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## QFabric Switch Administration

- On a QFabric switch, when you issue the **request chassis routing-engine master switch node-group node-group-name** command, the switchover from the master device to the backup device within a Node group might not happen. [PR/675258: This issue has been resolved.]
- On a QFabric switch, when the master Control Board on an Interconnect device loses connectivity with the QFabric switch control plane network, the **show fabric administration inventory** command displays the network Node group as **disconnected** even if the backup Control Board is still connected to the QFabric switch control plane network. There is no impact on traffic forwarding. [PR/677407: This issue has been resolved.]
- On a QFabric switch, when you modify your configuration to remove a Node device from a network Node group, the Node device is not visible in the output of the **show fabric administration inventory** command until the Node device has rejoined its own automatically generated Node group. As a workaround, issue the **show fabric administration inventory node-devices** command to see all the Node devices. [PR/678184: This issue has been resolved.]

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## Security

- On a QFabric switch, if you apply a firewall filter on a redundant server Node group, and the firewall filter contains an action which redirects traffic across an interface that belongs to a different Node group (such as a network Node group), the action might not be processed by the redundant server Node group. As a workaround, ensure that the actions in your Node group-based firewall filter use interfaces that are part of the same Node group. [PR/679808: This issue has been resolved.]
- On a QFabric switch, the **port-error-disable** statement at the **[edit ethernet-switching-options]** hierarchy level is not available. Because the statement is

unavailable, you cannot disable (rather than block) an interface when enforcing MAC limiting and storm control and allow the interface to recover automatically from the error condition after a specified period of time. [PR/682810: This issue has been resolved.]

- On a QFabric switch, if you configure port mirroring on a redundant server Node group, the port mirroring configuration does not work if the Node group fails over to a new master. If this failover occurs, delete the inherited port mirroring configuration on the new master and configure port mirroring again. [PR/683102: This issue has been resolved.]
- On a QFabric switch, the **no-multicast** statement is missing from the **[edit ethernet-switching-options storm-control interface *interface-name*]** hierarchy level. [PR/684468: This issue has been resolved.]

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## Storage

- On a QFabric switch, IGMP snooping is enabled by default on all VLANs. The FCoE CNAs normally use untagged packets that the switch maps to the native VLAN. If the switch is acting as an FCoE transit switch and IGMP snooping is enabled on the native VLAN, then FIP VLAN discovery messages do not receive responses from the FCF. Although this is a Juniper Networks issue, different CNAs have different behaviors when this occurs. The FIP VLAN discovery failure does not affect CNAs that listen to the FCF's discovery advertisements and send a unicast discovery solicitation directly to the FCF if no response to the discovery advertisement is received. Other CNAs might remain in a *pending* state if FIP VLAN discovery fails and do not connect with or log in to the FCF. Juniper Networks testing suggests that the issue is more likely to prevent FCoE operation with some vendors' CNAs, but other vendors' CNAs might work even when the issue is present.

In addition, IGMP snooping should always be manually disabled on FCoE VLANs. Protocol restrictions regarding FCoE VLANs are a best practice. However, this issue might prevent FIP discovery from succeeding if IGMP snooping inadvertently remains enabled on an FCoE VLAN.

We have validated two workarounds to the issue:

- Workaround 1:
  1. Disable IGMP snooping on the native VLAN by issuing the following configuration mode command at the **[edit]** hierarchy level:  
user@switch# **set protocols igmp-snooping vlan *vlan-name* disable**
  2. Disable IGMP snooping on the FCoE VLAN:  
user@switch# **set protocols igmp-snooping vlan *vlan-name* disable**
- Workaround 2:
  - Disable FIP VLAN discovery on the CNA, and manually configure the CNA to use the required FCoE VLAN.

[PR/556174: This issue has been resolved.]

- On a QFabric switch, Ethernet 802.3x PAUSE functionality is enabled by default for received (Rx) frames on all ports. If you enable priority-based flow control (PFC) on a port, that port does not disable Ethernet 802.3x PAUSE functionality on received frames. Ports do not generate Ethernet 802.3x PAUSE frames for transmitted (Tx) traffic when PFC is enabled. [PR/594248: This issue has been resolved.]
- On a QFabric switch, after an FCoE device logs out of the fabric, its source MAC address entry is not deleted from the system. When an FCoE device logs in to the fabric through the switch, the switch uses FCoE Initialization Protocol (FIP) to snoop the FCoE device information. The switch uses the snooped information to add the device's MAC address to a FIP filter. Being added to the FIP filter permits the FCoE device to connect to the storage area network (SAN). When the FCoE device logs out of the fabric, its source MAC address entry should be deleted from the FIP filter, but it is not. [PR/663556: This issue has been resolved.]

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### User and Access Management

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- On a QFabric switch, if you configure a user in the local database on the switch but do not provide a password, and you configure an authentication order of **[radius tacplus]**, the local database user might still be able to log in to the QFabric switch without providing a password. [PR/613826: This issue has been resolved.]

#### Related Documentation

- [New Features in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 4](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 16](#)
- [Limitations in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 18](#)
- [Errata in Documentation for Junos OS Release 11.3 for QFX3000 QFabric Switches on page 37](#)
- [Upgrading Software on a QFabric System on page 40](#)
- [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)

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## Errata in Documentation for Junos OS Release 11.3 for QFX3000 QFabric Switches

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This section lists outstanding issues with the documentation.

## Hardware

- The printed *QFX3100 Director Device Quick Start* that is included with the QFX3100 Director device incorrectly describes the Director device initial configuration process. Please download the corrected version of the *QFX3100 Director Device Quick Start* from <http://www.juniper.net/techpubs/>.

## Junos OS Basics

- Support for QFabric switch licenses, including the related CLI commands, is currently documented. However, the CLI commands related to licenses are not supported on the switch. The lack of CLI support for licenses does not obviate the need to purchase a license for any licensed feature you use.

## QFabric Switch Administration

- The following supported command is not documented in the current version of the QFabric switch documentation:
  - **request fabric administration remove node-device *node-device-name***
- For Director devices, the backup link aggregation group connected to the control plane network on ports 0, 1, and 2 on module 1 does not activate in Junos OS Releases 11.3X30.6 and 11.3X30.9.
- The **show chassis zones detail** command is currently undocumented. Use this command to display the status of the two cooling systems, called ZONE 0 and ZONE 1, on your Interconnect device. ZONE 0 consists of eight (0 through 7) front cards, which are cooled by two fan trays. ZONE 1 consists of two control boards and eight (0 through 7) rear cards, which are cooled by eight (0 through 7) fan trays.
- A description of the QFabric component automatic upgrade feature is not available in the QFX Series documentation at the present time.

## Standards Support

In addition to the standards listed in the [Standards Supported by the Junos OS](#) document, QFabric switches support the following standards and RFCs:

- IEEE standards
  - IEEE 802.3ab: *1000BASE-T*
  - IEEE 802.3z: *1000BASE-X*
  - IEEE 802.3ae: *10-Gigabit Ethernet*
- Supported RFCs
  - RFC 1591: *Domain Name System (DNS)*
  - RFC 1765: *OSPF Database Overflow*
  - RFC 2154: *OSPF with Digital Signatures (Password, MD-5)*

- [RFC 4486: Subcodes for BGP Cease Notification Message](#)
- [Draft-ietf-isis-restart-02: Restart Signaling for IS-IS](#)
- [PIM-DM Draft IETF PIM: Dense Mode draft-ietf-idmr-pimdm-05.txt, draft-ietf-pim-dm-new-v2-04.txt](#)

## Storage

- In a QFabric switch, if any queue that contains outgoing packets does not transmit packets for 12 consecutive seconds, the port is automatically reset. This can be caused by a strict-high priority queue consuming all of the port bandwidth, or by several queues consuming all of the port bandwidth, or by other conditions that prevent a queue from obtaining port bandwidth for 12 consecutive seconds.

If the cause is a strict-high priority queue consuming all of the port bandwidth, you can use rate shaping to configure a maximum rate for the strict-high priority queue and prevent it from using all of the port bandwidth. To configure rate shaping, include the **shaping-rate (rate | percent)** statement at the **[edit class-of-service schedulers scheduler-name]** hierarchy level and apply the shaping rate to the strict-high priority scheduler.

## System Log Messages

- System log messages originating from the QFabric switch Director group are currently undocumented. Messages originating from other QFabric switch components are documented in the *Junos OS System Log Messages Reference*.
- System log messages that are generated as a result of error conditions in QSFP+ interfaces are currently not documented in the *Junos OS System Log Messages Reference*.

### Related Documentation

- [New Features in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 4](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 16](#)
- [Limitations in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 18](#)
- [Outstanding Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 20](#)
- [Resolved Issues in Junos OS Release 11.3 for QFX3000 QFabric Switches on page 26](#)
- [Upgrading Software on a QFabric System on page 40](#)
- [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)

## Upgrade and Downgrade Instructions for Junos OS Release 11.3 for QFX3000 QFabric Switches

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This section discusses the following topics:

- [Upgrading Software on a QFX3000 QFabric Switch on page 40](#)
- [Performing a QFabric Switch Recovery Installation on the Director Group on page 47](#)

### Upgrading Software on a QFX3000 QFabric Switch

The QFabric switch software package contains software for all of the different components in the QFabric switch, such as the Director group, Interconnect devices, Node devices, and other QFabric switch components. You can either upgrade the software on all of the QFabric components at the same time, or you can upgrade the software on the QFabric switch components one at a time.



**NOTE:** Before you install the software, we recommend that you back up your current configuration files by issuing the **request system software configuration-backup** command.

This topic describes the following tasks:

- [Backing Up the Current Configuration Files on page 40](#)
- [Restoring the Current Configuration Files on page 40](#)
- [Downloading Software Files Using a Browser on page 41](#)
- [Retrieving Software Files for Download on page 42](#)
- [Installing the Software Package on the Entire QFabric Switch on page 42](#)
- [Installing the Software Package on Individual Components of the QFabric Switch on page 44](#)

### Backing Up the Current Configuration Files

---

To back up your current configuration files:

```
user@switch> request system software configuration-backup path
```

Back up the configuration files to a local directory, remote server, or removable drive (for example, an external USB flash drive).

For example:

```
user@switch> request system software configuration-backup /media/USB/
```

### Restoring the Current Configuration Files

---

To restore your current configuration files:

```
user@switch> request system software configuration-restore path
```

For example:

```
user@switch> request system software configuration-restore /media/USB/
```



## Downloading Software Files Using a Browser



**NOTE:** To access the download site, you must have a service contract with Juniper Networks and an access account. If you need help obtaining an account, complete the registration form at the Juniper Networks website <https://www.juniper.net/registration/Register.jsp>.

To download the software package:

1. In a browser, go to <http://www.juniper.net/support/downloads/junos.html> .  
The Junos Platforms Download Software page appears.
2. In the QFX Series section of the Junos Platforms Download Software page, select the QFX Series platform for which you want to download the software (such as the QFX3000-G QFabric System).
3. Select **11.3** in the Release pull-down list to the right of the tabs on the Download Software page.
4. Click on the **Software** tab.
5. In the QFabric System Install Package section of the **Software** tab, select the QFabric System Complete Install Package for the 11.3X30.14 release.
6. Enter your user ID and password and press **Enter**.
7. Read the End User License Agreement, select the **I Agree** option, and then click **Proceed**.
8. Save the **jinstall-qfabric-11.3X30.14.rpm** file to a computer or server location that is accessible by your management network.
9. From the QFabric CLI, transfer the Junos OS software from your computer or server location to the QFabric system by issuing the **request system software download** command.
10. Install the software using one of the **request system software add package-name component** commands.

### Retrieving Software Files for Download

---

Before you install the software on the QFabric switch, retrieve the software from the location in which you downloaded it.

- To retrieve the software:

```
user@switch> request system software download /path/package-name
```

For example:

```
user@switch> request system software download
ftp://server/files/jinstall-qfabric-11.3X30.14.rpm
```

### Installing the Software Package on the Entire QFabric Switch

---

To install the software on all of the QFabric switch components:

1. Issue the **request system software add *package-name* component all reboot** command.

For example:

```
user@switch> request system software add jinstall-qfabric-11.3X30.14.rpm component all
reboot
```



**NOTE:** If you receive an error message after issuing the **request system software add *package-name* component all reboot** command that says that the configuration file cannot be loaded as is, you need to enter configuration mode, make any necessary changes to the configuration file, and then commit the changes.

2. After the reboot has finished, verify that the new version of software has been properly installed by issuing the **show version component all** command.

```
user@switch> show version component all
dg1:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3X30.14]

dg0:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3X30.14]

NW-NG-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
```

JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

FC-0:

-  
Hostname: qfabric  
Model: qfx-jvre  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

FC-1:

Hostname: qfabric  
Model: qfx-jvre  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

DRE-0:

-  
Hostname: dre-0  
Model: qfx-jvre  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

FM-0:

-  
Hostname: qfabric  
Model: qfx-jvre  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

nodedevice1:

-  
Hostname: qfabric  
Model: QFX3500  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]

```
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

interconnectdevice1:

```
-
Hostname: qfabric
Model: QFX3108
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

### Installing the Software Package on Individual Components of the QFabric Switch

Installing the software on individual components of the QFabric switch, or performing what is called a *rolling upgrade*, only affects the components for which you are installing software.

1. To install software on the Director group:

```
user@switch> request system software add package-name component director-group reboot
```

For example:

```
user@switch> request system software add jinstall-qfabric-11.3X30.14.rpm component
director-group reboot
```



**NOTE:** If you receive an error message after issuing the `request system software add package-name component director-group reboot` command that says that the configuration file cannot be loaded as is, you will need to enter configuration mode, make any necessary changes to the configuration file, and then commit the changes.

2. To install software on the fabric (fabric control Routing Engines and the Interconnect devices) gracefully:

```
user@switch> request system software add jinstall-qfabric-11.3X30.14.rpm component fabric
user@switch> request system reboot fabric graceful
```

3. To install software on a Node group:



**NOTE:** You need to issue this command for each Node group, because you cannot upgrade more than one Node group at a time.

```
user@switch> request system software add package-name component node-group name
reboot
```

For example:

```
user@switch> request system software add jinstall-qfabric-11.3X30.14.rpm component
node-group name reboot
```

4. After you have installed the software on each of the components and have rebooted, verify that the new version of software has been properly installed by issuing the **show version component all** command.

```
user@switch> show version component all
dg1:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3X30.14]

dg0:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3X30.14]

NW-NG-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]

FC-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]

FC-1:
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]

DRE-0:
-
Hostname: dre-0
Model: qfx-jvre
```

```
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

FM-0:

```
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

nodedevice1:

```
-
Hostname: qfabric
Model: QFX3500
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

interconnectdevice1:

```
-
Hostname: qfabric
Model: QFX3108
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

- Related Documentation**
- [Software Installation Overview](#)
  - [Performing a QFabric System Recovery Installation on the Director Group on page 47](#)
  - [request system software add](#)
  - [Junos OS Installation and Upgrade Guide](#)

## Performing a QFabric Switch Recovery Installation on the Director Group

If the software on your QFabric switch is damaged in some way that prevents the software from loading correctly, or you need to upgrade the software on your QFabric switch, you may need to perform a recovery installation on the Director group.

If possible, perform the following steps before you perform the recovery installation:

1. Ensure that you have an emergency boot device (for example, an external USB flash drive) for each of your Director devices to use during the recovery installation.

You can either use the external USB flash drive containing the software supplied by Juniper Networks, or you can use an external USB flash drive supplied by Juniper Networks on which you install the QFabric switch install media.

2. Back up any configuration files and initial setup information on a different external USB flash drive and then restore this information as part of the recovery process. Use the **request system software configuration-backup** command to back up your configuration files and initial setup information:

```
user@switch> request system software configuration-backup path
```

Backing up the files to an external USB flash drive is the recommended method.



**NOTE:** To recover the Director group, you must upgrade both Director devices in parallel. If you are recovering only one Director device in a Director group, and the software version will remain the same between the two Director devices, make sure that the other Director device is powered on and operational. If the software version of the Director device you are recovering will be different, make sure that the other Director device is powered off and is not operational.



**NOTE:** The recovery installation process deletes the existing QFabric switch ID on the Director device and generates another one. If you encounter any licensing issues due to the changed QFabric switch ID, please contact the Juniper Technical Assistance Center (JTAC).

This topic describes the two ways to perform the recovery installation:

- [Performing a Recovery Installation Using a Juniper Networks External USB Flash Drive with Preloaded Software on page 48](#)
- [Performing a Recovery Installation Using a Juniper Networks External Blank USB Flash Drive on page 52](#)

### Performing a Recovery Installation Using a Juniper Networks External USB Flash Drive with Preloaded Software

---

This procedure describes how to perform a recovery installation using the external USB flash drive you received from Juniper Networks.

1. Insert the external USB flash drive supplied by Juniper Networks into the Director device.
2. If you have access to the default partition, reboot the Director device by issuing the **request system reboot director-group** command.
3. If you do not have access to the default partition, power cycle the Director device.

The following menu appears on the Director device console when the Director device boots up:

```
Juniper Networks QFabric Director Install/Recovery Media
- To boot from the local disk, wait 10 seconds or press the Enter key.
- To reinstall the QFabric software on this Director device, type: install
```

4. Type **install** and then press **Enter** to install the software on the Director device.

Once the installation process is complete, the Director device reboots, and the following menu appears on the Director device console:

```
Juniper Networks QFabric Director Install/Recovery Media
- To boot from the local disk, wait 10 seconds or press the Enter key.
- To reinstall the QFabric software on this Director device, type: install
```

5. Press **Enter**.

The Director device reboots from the local disk on which the software was just installed.



**NOTE:** Since the recovery installation process completely overwrites the entire contents of the Director device, you need to restore the required configuration files and initial setup information. Ensure that you have this information backed up on an external USB flash drive before you perform the following steps.

6. Log in as root on the Director device.

The following menu appears on the Director device console:

Before you can access the QFabric switch, you must complete the initial setup of the Director group by using the steps that follow.

If the initial setup procedure does not complete successfully, log out of the Director device and then log back in to restart this setup menu.

Continue?[y/n]

7. Enter **n** to bypass the initial setup script and enter the Director device root directory, where you can mount the external USB flash drive containing the configuration files and initial setup information.
8. Issue the **ls /mnt** command to list the **mount** directory.



```
root@dg0 ~]# ls /mnt
```

9. Issue the **mkdir** command to create a directory within the mount directory.

```
root@dg0 ~]# mkdir /mnt/myusb
```

10. Issue the **mount /dev/sdb2 /mnt/myusb/** command to mount the external USB flash drive to the local drive of the Director device.

```
root@dg0 ~]# mount /dev/sdb2 /mnt/myusb/
```

11. Issue the **ls -la /mnt/mnt/myusb/** command to verify the contents of your mounted external USB flashdrive.

```
root@dg0 ~]# ls -la /mnt/mnt/myusb/
total 1770884
drwxr-xr-x 2 root root      4096 Sep  7 05:16 .
drwxr-xr-x 3 root root      4096 Sep  7 10:15 ..
-rw-r--r-- 1 root root     4249 Sep  7 03:52 mybackup-20110907
```

12. Exit the Director device and log back in as root on the Director device.

The following menu appears:

Before you can access the QFabric switch, you must complete the initial setup of the Director group by using the steps that follow.  
If the initial setup procedure does not complete successfully, log out of the Director device and then log back in to restart this setup menu.

```
Continue?[y/n] y
Initial Configuration
```

You may enter the configuration manually or restore from a backup.

```
Specify a backup file? [y/n] : y
Please specify the full path of the configuration backup file. :
/mnt/myusb/mybackup-20110907
```

13. Enter **y** to continue.

14. Enter **y** and specify the path to the backup configuration file located on the external USB flash drive.

```
/mnt/myusb/mybackup-20110907
```

The following messages appear:

```
Saving temporary configuration...
Configuring peer...
connect error for 1.1.1.2:9001
Configuring local interfaces...
Configuring interface eth0 with [10.49.213.163/24:10.49.213.254]
Configured interface eth0 with [10.49.213.163/24:10.49.213.254]
Configuring QFabric software with initial pool of 4000 MAC addresses
[00:10:00:00:00:00 - 00:10:00:00:0f:3b]
Configuring QFabric address [10.49.213.50]
Reconfiguring QFabric software static configuration
Applying the new Director Device password
Applying the QFabric component password
First install initial configuration, generating and sharing SSH keys.
First install initial configuration, generating SSH keys.
connect error for 1.1.1.2:9001
Shared SSH keys.
```

Configuration complete. Director Group services will auto start within 30 seconds.

The Director device reboots from the local disk on which the software was just installed.

15. From the default partition, issue the **request system reboot all** command to reboot all of the components of the QFabric switch and to make sure that all components are running the same version of software.

```
user@switch> request system reboot all
```

16. Log in to the default partition and issue the **show version component all** command to verify that all components are running the same version of software.

```
user@switch> show version component all
```

```
dg1:
```

```
-
```

```
Hostname: qfabric
```

```
Model: qfx3100
```

```
JUNOS Base Version [11.3X30.14]
```

```
dg0:
```

```
-
```

```
Hostname: qfabric
```

```
Model: qfx3100
```

```
JUNOS Base Version [11.3X30.14]
```

```
NW-NG-0:
```

```
-
```

```
Hostname: qfabric
```

```
Model: qfx-jvre
```

```
JUNOS Base OS boot [11.3X30.14]
```

```
JUNOS Base OS Software Suite [11.3X30.14]
```

```
JUNOS Kernel Software Suite [11.3X30.14]
```

```
JUNOS Crypto Software Suite [11.3X30.14]
```

```
JUNOS Online Documentation [11.3X30.14]
```

```
JUNOS Enterprise Software Suite [11.3X30.14]
```

```
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
```

```
JUNOS Routing Software Suite [11.3X30.14]
```

```
FC-0:
```

```
-
```

```
Hostname: qfabric
```

```
Model: qfx-jvre
```

```
JUNOS Base OS boot [11.3X30.14]
```

```
JUNOS Base OS Software Suite [11.3X30.14]
```

```
JUNOS Kernel Software Suite [11.3X30.14]
```

```
JUNOS Crypto Software Suite [11.3X30.14]
```

```
JUNOS Online Documentation [11.3X30.14]
```

```
JUNOS Enterprise Software Suite [11.3X30.14]
```

```
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
```

```
JUNOS Routing Software Suite [11.3X30.14]
```

```
FC-1:
```

```
Hostname: qfabric
```

```
Model: qfx-jvre
```

```
JUNOS Base OS boot [11.3X30.14]
```

```
JUNOS Base OS Software Suite [11.3X30.14]
```

```
JUNOS Kernel Software Suite [11.3X30.14]
```

```
JUNOS Crypto Software Suite [11.3X30.14]
```

```
JUNOS Online Documentation [11.3X30.14]
```

```
JUNOS Enterprise Software Suite [11.3X30.14]
```

JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

DRE-0:

-  
Hostname: dre-0  
Model: qfx-jvre  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

FM-0:

-  
Hostname: qfabric  
Model: qfx-jvre  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

nodedevicel:

-  
Hostname: qfabric  
Model: QFX3500  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]

interconnectdevicel:

-  
Hostname: qfabric  
Model: QFX3108  
JUNOS Base OS boot [11.3X30.14]  
JUNOS Base OS Software Suite [11.3X30.14]  
JUNOS Kernel Software Suite [11.3X30.14]  
JUNOS Crypto Software Suite [11.3X30.14]  
JUNOS Online Documentation [11.3X30.14]  
JUNOS Enterprise Software Suite [11.3X30.14]  
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]  
JUNOS Routing Software Suite [11.3X30.14]  
warning: from interconnectdevice0: Disconnected

## Performing a Recovery Installation Using a Juniper Networks External Blank USB Flash Drive

---

If you do not have an external USB flash drive preloaded with the software from Juniper Networks to use as an emergency boot device, you can create your own, using a blank external USB flash drive provided by Juniper Networks. You need to download the install media from the Juniper Networks Support website onto your UNIX workstation, uncompress and untar the software, and then burn the software image onto your Juniper Networks external USB (4-gigabyte) flash drive. Make sure you create two emergency boot devices, one for each Director device, so you can perform a recovery installation in parallel.



**NOTE:** Because the recovery installation process completely overwrites the entire contents of the Director device, you need to restore the required configuration files and initial setup information. Ensure that you have this information backed up on an external USB flash drive before you perform the following steps.

1. In a browser, go to <http://www.juniper.net/support/downloads/junos.html> .  
The Junos Platforms Download Software page appears.
2. In the QFX Series section of the Junos Platforms Download Software page, select the QFX Series platform for which you want to download the software (such as the QFX3000-G QFabric System).
3. Select **11.3** in the Release pull-down list to the right of the tabs on the Download Software page.
4. Click on the **Software** tab.
5. In the QFabric System Install Media section of the **Software** tab, select the QFabric System Complete Install Media for the 11.3X30.14 release.
6. Enter your user ID and password and press **Enter**.
7. Read the End User License Agreement, select the **I Agree** option, and then click **Proceed**.
8. Save the **install-media-qfabric-11.3X30.14.img.tgz** file to your UNIX workstation that is accessible by your management network.
9. Use FTP to access the UNIX workstation where the install media resides.  
**ftp ftp://hostname / pathname / install-media-qfabric-version.img.tgz**
10. When prompted, enter your username and password.
11. Make sure you are in binary mode by entering **binary** at the prompt.  
**binary**
12. Use the **get** command to transfer the installation package from the FTP host to your UNIX workstation.  
**get install-media-qfabric-version.img.tgz**
13. Close the FTP session:

bye

14. Untar the *install-media-qfabric-version.img.tgz* file on your UNIX workstation.

```
tar -xvzf install-media-qfabric-11.3X30.14.img.tgz
```

15. Insert a blank external USB (4-gigabyte) flash drive supplied by Juniper Networks into your UNIX workstation.

16. Burn the software image you just downloaded to your UNIX workstation onto your external USB flash drive using the **dd** command:

```
dd if=install-media-qfabric-11.3X30.14.img of=/dev/sdb bs=16k
250880+0 records in
250880+0 records out
4110417920 bytes (4.1 GB) copied, 5.10768 seconds, 805 MB/s
```

17. If you have access to the default partition, reboot the Director device by issuing the **request system reboot director-group** command.
18. If you do not have access to the default partition, power cycle the Director device.

The following menu appears on the Director device console when the Director device boots up:

```
Juniper Networks QFabric Director Install/Recovery Media
- To boot from the local disk, wait 10 seconds or press the Enter key.
- To reinstall the QFabric software on this Director device, type: install
```

19. Type **install** and then press **Enter** to install the software on the Director device.

Once the installation process is complete, the Director device reboots, and the following menu appears on the Director device console:

```
Juniper Networks QFabric Director Install/Recovery Media
- To boot from the local disk, wait 10 seconds or press the Enter key.
- To reinstall the QFabric software on this Director device, type: install
```

20. Press **Enter**. The Director device reboots from the local disk on which the software was just installed.

21. Log in as root from the Director device.



**NOTE:** Because the recovery installation process completely overwrites the entire contents of the Director device, you need to restore the required configuration files and initial setup information. Ensure that you have this information backed up on an external USB flash drive.

The following menu appears on the Director device console:

```
Before you can access the QFabric switch, you must complete the initial setup
of the Director group by using the steps that follow.
If the initial setup procedure does not complete successfully, log out of the
Director device and then log back in to restart
this setup menu.
```

```
Continue?[y/n]
```

22. Enter **n** to bypass the initial setup script and enter the Director device **root** directory, where you can mount the external USB flash drive containing the configuration files and initial setup information.

23. Issue the **ls /mnt** command to list the **mount** directory.

```
root@dg0 ~]# ls /mnt
```

24. Issue the **mkdir** command to create a directory within the **mount** directory.

```
root@dg0 ~]# mkdir /mnt/myusb
```

25. Issue the **mount /dev/sdb2 /mnt/myusb/** command to mount the external USB flash drive to the local drive of the Director device.

```
root@dg0 ~]# mount /dev/sdb2 /mnt/myusb/
```

26. Issue the **ls -la /mnt/mnt/myusb/** command to verify the contents of your mounted external USB flash drive.

```
root@dg0 ~]# ls -la /mnt/mnt/myusb/
total 1770884
drwxr-xr-x 2 root root      4096 Sep  7 05:16 .
drwxr-xr-x 3 root root      4096 Sep  7 10:15 ..
-rw-r--r-- 1 root root    4249 Sep  7 03:52 mybackup-20110907
```

27. Exit the Director device and log back in as root on the Director device.

The following menu appears:

Before you can access the QFabric switch, you must complete the initial setup of the Director group by using the steps that follow.

If the initial setup procedure does not complete successfully, log out of the Director device and then log back in to restart this setup menu.

```
Continue?[y/n] y
Initial Configuration
```

You may enter the configuration manually or restore from a backup.

```
Specify a backup file? [y/n] : y
Please specify the full path of the configuration backup file. :
/mnt/myusb/mybackup-20110907
```

28. Enter **y** to continue.

29. Enter **y** and specify the path to the backup configuration file located on the external USB flash drive.

```
/mnt/myusb/mybackup-20110907
```

The following messages appear:

```
Saving temporary configuration...
Configuring peer...
connect error for 1.1.1.2:9001
Configuring local interfaces...
Configuring interface eth0 with [10.49.213.163/24:10.49.213.254]
Configured interface eth0 with [10.49.213.163/24:10.49.213.254]
Configuring QFabric software with initial pool of 4000 MAC addresses
[00:10:00:00:00:00 - 00:10:00:00:0f:3b]
Configuring QFabric address [10.49.213.50]
Reconfiguring QFabric software static configuration
Applying the new Director Device password
Applying the QFabric component password
First install initial configuration, generating and sharing SSH keys.
First install initial configuration, generating SSH keys.
connect error for 1.1.1.2:9001
Shared SSH keys.
```

Configuration complete. Director Group services will auto start within 30 seconds.

30. Issue the **show fabric administration inventory** command and confirm that all the devices are in the **Connected** state. Once the devices are connected, the Director group checks the software version of all the devices. If there is a difference between the version available in the Director group and the version of a component, the Director device automatically upgrades or downgrades the affected components to match the software version of the Director group.
31. From the default partition, issue the **show version component all** command to verify that all components are running the same version of software.

```
user@switch> show version component all
dg1:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3X30.14]

dg0:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3X30.14]

NW-NG-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]

FC-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]

FC-1:
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
```

```
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

DRE-0:

```
-
Hostname: dre-0
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

FM-0:

```
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

nodedevice1:

```
-
Hostname: qfabric
Model: QFX3500
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
```

interconnectdevice1:

```
-
Hostname: qfabric
Model: QFX3108
JUNOS Base OS boot [11.3X30.14]
JUNOS Base OS Software Suite [11.3X30.14]
JUNOS Kernel Software Suite [11.3X30.14]
JUNOS Crypto Software Suite [11.3X30.14]
JUNOS Online Documentation [11.3X30.14]
JUNOS Enterprise Software Suite [11.3X30.14]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3X30.14]
JUNOS Routing Software Suite [11.3X30.14]
warning: from interconnectdevice0: Disconnected
```

- Related Documentation**
- [Performing the QFabric System Initial Setup on a QFX3100 Director Group](#)
  - [Upgrading Software on a QFabric System on page 40](#)



- request system software configuration-backup
- request system software configuration-restore

## QFX Series Documentation for Junos OS Release 11.3

Title	Description
<i>Complete Hardware Guide for QFX3000 QFabric Switches</i>	Component descriptions, site preparation, installation, replacement, and safety and compliance information for QFX3000 QFabric switches (including QFX3500 Node devices, QFX3100 Director devices, and QFX3008-I Interconnect devices)
<i>Complete Software Guide for Junos OS for the QFX Series, Release 11.3</i>	Software feature descriptions, configuration examples, and tasks for Junos OS for the QFX Series
<i>Junos OS Software Release Notes for Juniper Networks QFX3000 QFabric Switches, Release 11.3</i>	Summary of hardware and software features, and known problems with the software and hardware
<i>QFabric Switches Deployment Guide</i>	Hardware and software information for deploying QFX3000 QFabric switches

## Requesting Support

For technical support, open a support case with the Case Manager link at <http://www.juniper.net/customers/support/>, e-mail the technical assistance center (TAC) at [support@juniper.net](mailto:support@juniper.net), or call 1-888-314-JTAC (from the United States, Canada, or Mexico) or 1-408-745-9500 (from elsewhere).

## Revision History

31 July 2012—Revision 5, Junos OS for QFX3000 QFabric switches, Release 11.3X30.14

6 April 2012—Revision 4, Junos OS for QFX3000 QFabric switches, Release 11.3X30.10 (Updated)

15 March 2012—Revision 3, Junos OS for QFX3000 QFabric switches, Release 11.3X30.10

22 November 2011—Revision 2, Junos OS for QFX3000 QFabric switches, Release 11.3X30.9

14 September 2011—Revision 1, Junos OS for QFX3000 QFabric switches, Release 11.3X30.6

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