

Junos[®] OS Software Release Notes for the Juniper Networks QFX Series

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New Features in Junos OS Release 12.3X50-D10 for the QFX Series

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Hardware

- **Support for configuring 40-Gigabit Ethernet interfaces on QFX-QSFP-DAC-1M and QFX-QSFP-DAC-3M QSFP+ direct-attach copper (DAC) cables (QFX3500 and QFX3600 standalone switches)**—On QFX3500 and QFX3600 standalone switches, you can configure 40-Gbps QSFP+ DAC cables to operate as 40-Gigabit Ethernet interfaces. [See [Interface Support for the QFX3500 Device](#) and [Interface Support for the QFX3600 Device](#).]
- **Support for 1000BASE-BX SFP transceivers**—On QFX3500 devices you can use 1000BASE-BX-U and 1000BASE-BX-D bidirectional SFP transceivers to configure 1000BASE-BX Gigabit Ethernet interfaces.
- **Support for third-party transceivers**--Allows you to use fiber-optic transceivers made by other vendors with QFX Series switches. The requirement to use Juniper Networks transceivers exclusively has been removed. This feature is enabled by default and no configuration is required to use this functionality.

Interfaces

- **Layer 3 unicast and multicast support for multichassis link aggregation (QFX3500 and QFX3600 standalone switches)**—The following Layer 3 unicast and multicast features are supported:
 - VRRP active-standby support—Enables Layer 3 routing over MC-AE interfaces.
 - Address Resolution Protocol (ARP) synchronization—Enables ARP synchronization to occur independently on the MC-LAG peers.
 - Routed VLAN interface (RVI) MAC address synchronization—Enables an MC-LAG peer to forward Layer 3 packets arriving on MC-AE interfaces with either its own RVI MAC address or its peer's RVI MAC address.
 - DHCP relay with option 82—Enables option 82 on MC-LAG peers. Option 82 provides information about the network location of DHCP clients. The DHCP server uses this information to implement IP addresses or other parameters for the client.
 - Multicast dual designated router (DR)—Enables faster convergence for MC-LAG peer failovers. To configure a dual designated router (DR), issue the **set protocols**

pim interface *interface-name* dual-dr command for VLAN interfaces on each MC-LAG peer.

- Private VLAN (PVLAN)—Enables an administrator to split a broadcast domain into multiple isolated broadcast subdomains, essentially putting a VLAN inside a VLAN. A PVLAN can span multiple peers on an MC-LAG.

[See [Understanding Multichassis Link Aggregation](#).]

IPv6 Features

- **Support for IPv6 on network interfaces (QFX3500 and QFX3600 standalone switches)**—Enables IPv6 support for many protocols and features on network interfaces on QFX3500 and QFX3600 standalone switches. (IPv6 support for management interfaces was introduced in Junos OS Release 12.2X50-D20.) IPv6 is supported on network interfaces with the following protocols and features:
 - Neighbor discovery
 - Stateless autoconfiguration
 - Router advertisements
 - Link aggregation groups (including hitless forwarding)
 - Routed VLAN interfaces
 - LLDP
 - SSH
 - Telnet
 - Ping
 - Traceroute
 - Virtual routers
 - Static routing
 - RIPv6
 - OSPFv3
 - IS-ISv6
 - BFD
 - BGPv6
 - Graceful restart for routing protocols
 - CoS
 - VRRPv3
 - Firewall filters
 - RADIUS
 - TACACS+

- AAA
- SNMP
- NTP
- Syslog
- IPv6 statistics and counters
- Path MTU discovery

Multicast Protocols

- **Multicast VLAN registration (QFX3500 and QFX3600 standalone switches)**—Enables you to efficiently distribute IPTV multicast streams across an Ethernet ring-based Layer 2 network by creating a multicast source VLAN (MVLAN), which becomes the only VLAN over which multicast traffic flows throughout the Layer 2 network. Multicast traffic can then be selectively forwarded from ports on the MVLAN (source ports) to hosts that are connected to ports that are not part of the MVLAN, thereby eliminating the need to send duplicate multicast streams to each requesting VLAN in the network. [See [Understanding Multicast VLAN Registration](#).]
- **IGMP querier (QFX3500 and QFX3600 standalone switches)**—Enables multicast traffic to be forwarded between connected switches in pure Layer 2 networks. If you enable IGMP snooping in a Layer 2 network without a multicast router, the IGMP snooping reports are not forwarded between connected switches. This means that if hosts connected to different switches in the network join the same multicast group and traffic for that group arrives on one of the switches, the traffic is not forwarded to the other switches that have hosts that should receive the traffic. If you enable IGMP querying for a VLAN, multicast traffic is forwarded between switches that participate in the VLAN if they are connected to hosts that are members of the relevant multicast group. [See [IGMP Snooping Overview](#).]

Network Management and Monitoring

- **Port mirroring (QFX3500 and QFX3600 standalone switches)**—Copies packets entering or exiting a port or entering a VLAN and sends the copies to a system that analyzes the traffic. You can use port mirroring to send traffic to applications that analyze traffic for purposes such as monitoring compliance, enforcing policies, detecting intrusions, monitoring and predicting traffic patterns, correlating events, and so on. Junos OS Release 12.3 adds support for encapsulating the mirrored packets, which means that you can send the mirrored traffic to an IP address. The analyzer system therefore does not have to be on the same LAN as the switch that is mirroring the traffic. [See [Understanding Port Mirroring](#).]
- **Smart DHCP relay (QFX3500 and QFX3600 standalone switches)**—Enables you to configure alternative gateway addresses for a Dynamic Host Configuration Protocol (DHCP) server. When you configure a Juniper Networks switch to act as a DHCP relay agent, the switch relays DHCP requests that it receives from hosts to a specified DHCP server. Smart DHCP relay allows you to configure secondary gateway IP addresses for the DHCP server, so that if the server fails to reply to the requests sent to the primary

gateway address, the switch can resend the requests to the alternative gateway addresses. [See [DHCP and BOOTP Relay Overview](#).]

Storage and Fibre Channel

- **FIP snooping scaling enhancements (QFX3500 and QFX3600 standalone switches)**—Increase the maximum number of FIP snooping sessions from 376 to 2500. [See [Understanding VN_Port to VF_Port FIP Snooping on an FCoE Transit Switch](#) and [Understanding VN_Port to VN_Port FIP Snooping on an FCoE Transit Switch](#).]
- **FIP snooping FCoE-FC gateway scaling enhancements (QFX3500 standalone switches)**—Increase the maximum number of FIP snooping sessions from 376 to 2500 when the QFX3500 switch acts as an FCoE-FC gateway. [See [Understanding FIP Parameters](#).]
- **FCoE-FC gateway link automated load balancing (QFX3500 standalone switches)**—Enables you to automatically redistribute the session load among the active Fibre Channel links when new sessions are initiated. You can also use the CLI to force a load-balancing operation. This feature also introduces a new load-balancing mode based on fabric login (FLOGI) sessions (added to existing session-based and ENode-based load-balancing modes). You can specify different load-balancing modes and automation configurations for different local FC fabrics on the FCoE-FC gateway. [See [Understanding Load Balancing in an FCoE-FC Gateway Proxy Fabric](#).]
- **FCoE OxID hash control (QFX3500 and QFX3600 standalone switches)**—Enables you to configure the external LAG load distribution to include or exclude the OxID (originator exchange identifier) in the hash. When FCoE traffic uses a LAG interface, you configure whether or not the LAG uses the OxID in load-balancing traffic over the LAG links. [See [Understanding OxID Hash Control for FCoE Traffic Load Balancing](#).]

System Management

- **Zero Touch Provisioning (QFX3500 and QFX3600 standalone switches)**—Zero Touch Provisioning allows you to provision new Juniper Networks switches in your network automatically without manual intervention. When you physically connect a switch to the network and boot it with a default configuration, it attempts to upgrade the Junos OS software automatically and autoinstall a configuration file from the network.

The switch uses information that you configure on a Dynamic Host Configuration Protocol (DHCP) server to locate the necessary software image and configuration files on the network. If you do not configure the DHCP server to provide this information, the switch boots with the preinstalled software and default configuration.

The Zero Touch Provisioning process either upgrades or downgrades the Junos OS version. [See [Understanding Zero Touch Provisioning](#).]

Traffic Management

- **Priority-based flow control (PFC) enhancements (QFX3500 and QFX3600 standalone switches)**—Enable you to configure up to six lossless forwarding classes. The enhancements enable you to configure values for the maximum receive unit (MRU)

and cable length on Ethernet ingress interfaces to fine-tune buffer headroom allocation, and enable you to specify output queues on which to enable the pause function on Ethernet interfaces. [See [Understanding CoS IEEE 802.1p Priorities for Lossless Traffic Flows](#).]

- **Priority remapping (QFX3500 standalone switches)**—Enables you to remap IEEE 802.1p priorities and apply a fixed classifier to native Fibre Channel interfaces when the system act as an FCoE-FC gateway. [See [Understanding CoS IEEE 802.1p Priority Remapping on an FCoE-FC Gateway](#).]
- **Software buffer configurability (QFX3500 and QFX3600 standalone switches)**—Provides the ability to fine-tune buffer allocations to better support different mixtures of traffic types (lossy, multidestination, or lossless). You can configure the aggregate (all ports) shared buffer versus dedicated buffer allocation, and you can configure the headroom buffer size for lossless traffic. You can also fine-tune the egress queue buffer sizes. [See [Understanding CoS Buffer Configuration](#).]

Related Documentation

- [Limitations in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Outstanding Issues in Junos OS Release 12.3 for the QFX Series on page 10](#)
- [Errata in Documentation for Junos OS Release 12.3 for the QFX Series on page 17](#)
- [Upgrade and Downgrade Instructions for Junos OS Release 12.3 for the QFX Series on page 17](#)

Changes in Default Behavior and Syntax in Junos OS Release 12.3 for the QFX Series

Junos SDK

- As of Junos OS Release 12.3, Junos applications will install only if the application is built with the same release of the Junos SDK as the Junos OS Release on which the application is being installed. For example, an application built with Release 12.3R2 will install only on Junos OS Release 12.3R2 and will not install on Junos OS Release 12.3R1, Junos OS Release 12.3R3, or Junos OS Release 13.1R1. The Junos SDK is supported on the QFX3500 switch.

Related Documentation

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Limitations in Junos OS Release 12.3 for the QFX Series

This section lists the limitations in Junos OS Release 12.3 for the QFX Series.

Interfaces and Chassis

- After you insert a QSFP+ transceiver in a QFX3500 device, the status LED does not light green for up to 15 seconds. There is no workaround.
- On a QFX3500 switch, when both of the multichassis LAG (MC-LAG) links on both connected peers are down, the MAC addresses learned on the MC-LAG links should be removed from the MAC address table. However, if you issue the **show ethernet-switching table** operational command after all of the MC-LAG links go down, the MAC addresses learned on the MC-LAG still appear in the table and must age out before they are removed.
- On a QFX3500 switch, multichassis LAG (MC-LAG) interfaces are not supported for the default VLAN. Interfaces that are members of the default VLAN cannot be included in an MC-LAG interface.

Network Management

- If a QFX3500 switch drops traffic because of an ingress firewall filter, the switch does not generate an sFlow monitoring technology flow sample packet that contains this dropped traffic.

Security

- On a QFX3500 switch, if you enable multicast VLAN registration (MVR) and also apply a firewall filter to a VLAN (in either the input or output direction), the filter does not take effect.

Storage and Fibre Channel

- Each Fibre Channel fabric on an FCoE-FC gateway supports a maximum of four Fibre Channel over Ethernet (FCoE) VLAN interfaces.
- The maximum number of logins for each FCoE node (ENode) is a range of 32 to 2500. (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.)
- The maximum number of FCoE sessions for the switch, which equals the total number of fabric login (FLOGI) sessions plus the total number of fabric discovery (FDISC) sessions is 2500.
- The maximum number of FIP snooping sessions per QFX3500 switch is 2500.
- 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 Ethernet interface. The 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 Ethernet interface. You cannot use a fixed classifier to map FCoE traffic to an Ethernet interface because untagged traffic is classified in the FCoE forwarding class, but FCoE traffic must have a priority tag (FCoE traffic cannot be untagged).

For example, the following behavior aggregate classifier 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
```

- On a QFX Series device, a DCBX interoperability issue between 10-Gigabit Ethernet interfaces on QFX Series devices and 10-Gigabit Ethernet interfaces on another vendor's devices can prevent the two interfaces from performing DCBX negotiation successfully in the following scenario:
 1. On a QFX Series 10-Gigabit Ethernet interface, LLDP is running, but DCBX is disabled.
 2. On another vendor's device 10-Gigabit Ethernet interface, both LLDP and DCBX are running, but the interface is administratively down.
 3. When you bring another vendor's 10-Gigabit Ethernet interface up by issuing the **no shutdown** command, the device sends DCBX 1.01 (CEE) TLVs, but receives no acknowledge (ACK) message from the QFX Series device, because DCBX is not enabled on the QFX Series device. After a few tries, another vendor's devices send DCBX 1.00 (CIN) TLVs, and again receive no ACK messages from the QFX Series device.
 4. Enable DCBX on the QFX Series 10-Gigabit Ethernet interface. The interface sends DCBX 1.01 (CEE) TLVs, but the other vendor's device ignores them and replies with DCBX 1.00 (CIN) TLVs. The other vendor's device does not attempt to send or acknowledge DCBX 1.01 TLVs, only DCBX 1.00 TLVs.

In this case, the QFX Series device ignores the DCBX 1.00 (CIN) TLVs because the QFX Series does not support DCBX 1.00 (the QFX Series supports DCBX 1.01 and IEEE DCBX). The result is that the DCBX capabilities negotiation between the two interfaces fails.

Traffic Management

- You cannot apply classifiers and rewrite rules to routed VLAN interfaces (RVIs) because the members of RVIs are VLANs, not interfaces. You can apply classifiers and rewrite rules to Layer 2 logical interfaces and Layer 3 physical interfaces that are members of VLANs that belong to RVIs.

Related Documentation

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Outstanding Issues in Junos OS Release 12.3 for the QFX Series

The following issues are outstanding in Junos OS Release 12.3. 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>.

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Ethernet Switching

- On a QFX3500 switch, when you configure Q-in-Q tunneling on an interface, persistent MAC learning does not happen. The MAC entries are learned as dynamic entries. [PR/720380]

Hardware

- On a QFX3500 switch, the QSFP+ module might not be recognized by the switch. This happens only when you insert the QSFP+ module and does not happen during operation. As a workaround, remove and reinsert the QSFP+ module. [PR/793124]

Interfaces and Chassis

- On a QFX3500 switch, if you move the aggregated Ethernet interfaces from one routing instance to another, it is possible that one or more of the link aggregation groups might be declared down even though all of the member interfaces are up. As a workaround, disable and enable each member link of the affected LAG to bring the LAG to the up state. [PR/612277]
- On a QFX3500 switch, configuring the **traceoptions** statement at the **[edit forwarding-options helpers]** hierarchy level has no effect. As a workaround, configure the traceoptions statement with the **level all** and **flag all** options at the **[edit system services dhcp]** hierarchy level. [PR/716981]
- On a QFX3500 switch, if you enable the **flag** option for PIM trace options, the trace options log might display the wrong source IP address for outgoing register messages. [PR/735035]
- On a QFX3500 switch, the **show iccp** operational command output shows the registered client daemons even if no Interchassis Control Protocol (ICCP) peer is configured. The **show iccp** operational command always shows registered modules regardless of whether or not ICCP peers are configured. [PR/741964]
- On a QFX3500 switch with a multichassis link aggregation group (MC-LAG), the ICCP connection is not established if you add an authentication key and then delete it only at the global ICCP level. Authentication works correctly at the ICCP peer level. To work around the problem, delete the ICCP configuration and then add it again. [PR/745522]
- On a QFX3500 switch, if you enable backup liveness detection for a multichassis LAG by including the **iccp peer peer-ip-address backup-liveness-detection backup-peer-ip ip-address** at the **[edit protocols]** hierarchy level, and if the backup liveness packets are lost because of a temporary failure on the link, then both of the Node devices in the multichassis LAG remain active. If this happens, both of the Node devices send packets to the connected server. [PR/748755]
- On a QFX3600 standalone switch, if you have a firewall filter with a term having both the count and analyzer action modifiers, the value of the counter associated with the term is reset to 0 when you modify the configuration for the analyzer. [PR/797094]
- On a QFX3500 switch, if the following events happen in this order—ICCP goes down, and the multichassis aggregated Ethernet (MC-AE) interface on the active node goes

down—a double failover occurs. In this scenario, the standby node does not detect what happens on the active node, proceeds as if the active node were up, and blocks the interchassis link (ICL) traffic. The ICL traffic is not forwarded. [PR/797950]

- When a monitored xle (40-Gigabit Ethernet) interface on a QFX3500 switch fails, other interfaces also fail. [PR/807009]
- On a QFX3500 switch, if you change an interface family from inet to ethernet-switching, DHCP discover messages received from DHCP clients connected to that interface are not forwarded. To work around this problem, delete the interface and re-create it with ethernet-switching as its family. [PR/809696]
- On a QFX3500 switch, some MAC addresses might not be replicated on MC-LAG peers. To work around this problem, clear the MAC table. [PR/813138]
- On a QFX3500 switch with an MC-LAG configured for Layer 2, if the interchassis control link (ICL) interface fails and recovers, multicast traffic is flooded to all of the ports in the VLAN. The PFE flag `Ip4McastFloodMode` for the VLAN is changed to `MCAST_FLOOD_ALL`. [PR/814106]
- On a QFX3500 switch with an MC-LAG, if ICCP fails, the status of remote MC-AE peers is unknown. Even if a peer is configured as standby, traffic is not redirected to this peer because it is assumed that this peer is down. This behavior is not seen on an active peer. [PR/816488]
- On a QFX3500 switch, when an MC-AE (multichassis aggregated Ethernet) interface is converted to an AE (aggregated Ethernet) interface, it retains some MC-AE properties, which causes the interface to fail. To work around the problem, restart LACP (Link Aggregation Control Protocol). [PR/817325]
- On a QFX3600 switch, using the **vlan-range** option when creating VLAN members does not work on xleinterfaces. [PR/821542]
- On a QFX3500 switch with MC-AE MAC synchronization enabled, an MC-LAG peer can resolve ARP entries for an MC-LAG RVI with either of the MC-LAG peer MACs. If the downstream traffic is sent with one MAC address (MAC1) but the peer has resolved the MAC address with a different MAC address (MAC2), there is a possibility that MAC2 might not be learned by any of the access layer switches. This can result in flooding of the upstream traffic for MAC2. To work around this problem, make sure that the downstream traffic is sent from both MC-LAG peers periodically. This prevents the MAC addresses from aging out. [PR/822855]

Layer 2 Features

- On a QFX3500 switch, port mirroring does not work with 802.1Q subinterfaces that have unit numbers other than 0. (You configure 802.1Q subinterfaces using the **vlan-tagging** statement.) [PR/701498]
- On a QFX3500 switch, MAC table entries might not age out properly if the MAC address is assigned to a private VLAN. To work around this issue, you can restart the Ethernet switching process (eswd) to flush out all of the stale MAC entries. [PR/707487]
- On a QFX3500 switch, a port mirroring analyzer configured to match on ingress packets in a VLAN does not match protocol data units (PDUs) for Layer 2 protocols (for example,

STP or LACP). These Layer 2 Control PDUs are not mirrored to the output interface or to the VLAN configured in the analyzer. [PR/725710]

- On a QFX3500 switch, if you enable Layer 2 protocol tunneling and there are a large number of VLANs configured, the **show ethernet-switching layer2-protocol-tunneling statistics** command might not work. In this case, Layer 2 tunneling works properly, but the CLI command does not display any output. [PR/739027]
- On a QFX3500 switch, if you include the **no-path-mtu-discovery** statement at the **[edit system internet-options]** hierarchy level, the switch retains path MTU discovery instead of disabling the feature. [PR/826599]
- On a QFX3500 or QFX3600 switch, if you configure a private VLAN on a multichassis link aggregation interface, MAC addresses learned on the interface are also learned by the private secondary VLANs. If you later delete the private VLAN (including its secondary VLANs), the Ethernet switching table still includes entries for learned MAC addresses on the secondary VLANs. [PR/835472]

Layer 3 Features

- The **show isis route inet6** operational command is not available on a QFX3500 switch even though IPv6 is supported on the switch. [PR/820139]
- The **show route protocol ospf3** operational command is not available on a QFX3500 switch even though the OSPFv3 protocol is supported on the switch. [PR/820151]
- On a QFX3500 switch, if you enable per-packet load balancing in an IPv6 network by including the **load-balance per-packet** statement at the **[edit policy-options policy-statement policy-statement-name then]** hierarchy level, load balancing might not work and traffic might flow only over a single link. [PR/820915]
- On a QFX3500 switch, no ICMP redirects are sent for IPv6 packets when the incoming and outgoing interface are the same and the source address and the next hop are in the same subnet. However, the original packets are correctly forwarded to the outgoing interface. [PR/825173]
- If you configure two QFX3500 switches in a VRRP group to have the same VRRP priority, VRRP might not correctly use their IP addresses to decide which switch is the master for the group, which can result in both devices being the master. If there is a second VRRP group configured on the two switches, one switch might be the master for both groups. [PR/827557]
- On a QFX3500 switch, an EBGP session may not be established if it is configured with an IPv6 address that matches the pattern `xx00:x::x/x`. For example, an EBGP session with the IPv6 address `2200:1::1/120` might not come up. To prevent this problem, set the BGP multihop TTL value to be greater than 1 by configuring the **tll x** statement at the **[edit protocols bgp multihop]** hierarchy level on the BGP peers that use an address that matches this pattern. You can also prevent the problem by using IPv6 addresses that do not match this pattern. [PR/830126]
- On a QFX3500 switch, if you include the **fast-interval** statement at the **[edit interfaces interface-name unit logical-unit-number family inet address ip-address vrrp-group**

group-number] hierarchy level, VRRP advertisement frames might not be sent. [PR/832208]

- On a QFX3500 switch, the output of the **show vrrp extensive** command might display the VRRP advertisement packets field with a value of zero even when packets are being advertised. [PR/834289]

Multicast Features

- On a QFX3500 switch with a large number of VLANs configured (thousands of VLANs), if you enable or disable IGMP snooping on the VLANs, the system may take several minutes to implement the change. [PR/722774]
- If you configure multiple QFX3500 switches in a Layer 2 network to be IGMP queriers, the switch with the greater (higher) IGMP querier source address is the querier for the network. If you change the source address on the other switch so that it has the greater address, it should become the querier, but this does not occur. [PR/836699]

Network Management and Monitoring

- On QFX3500 switches, ingress and egress sFlow technology sampling can be enabled only on interfaces that are configured with the logical unit 0. sFlow technology sampling does not work on 802.1Q subinterfaces with a nonzero logical unit number. [PR/693879]
- On a QFX3500 switch, the SSH connection limit set for a routing instance does not take effect. Instead, the global SSH connection limit is enforced. There is no workaround. [PR/828542]
- On a QFX3500 switch, if you configure remote port mirroring with an IP address as the output, the mirrored packets might have the source MAC address 0x00deadbeef and the source IP address might be the network address of the network that the egress interface is a member of. The correct addresses should be the MAC address and IP address of the interface that the GRE encapsulated mirrored packets egress from. [PR/828546]
- On a QFX3500 switch, if you configure remote port mirroring with an IP address as the output, the identification field in the IP header is always set to 0 and the "do not fragment" bit in the flags field is not set. This means that fragmentation is allowed, and if the packet is fragmented it cannot be reassembled properly. You should ensure that the path MTU of each network segment between the QFX3500 switch and the analyzer device is large enough so that fragmentation does not occur. [PR/829722]
- On a QFX3500 switch, if you configure remote port mirroring so that packets are mirrored on egress from an interface that is a member of a VLAN and you also configure an IP address as the output, the GRE encapsulated mirrored packet does not have the correct VLAN tag when it is sent to the analyzer device. [PR/832247]

Routing Protocols

- On a QFX3500 switch, issuing the **restart routing immediate** operational command causes temporary traffic loss, as follows:
 1. Traffic loss occurs while the routing process restarts.

2. Traffic is recovered.
3. Traffic is lost again for a brief period.

[PR/708864]

- On a QFX3500 switch, the output of the **show msdp brief** command might display incorrect values for the SA count field. [PR/732115]
- On a QFX3500 switch, if you configure a firewall filter with more than 128 policers and attempt to apply the filter to a Layer 3 interface in the output direction, the commit operation fails, and the filter is not created. [PR/745327]

Security

- On a QFX3500 switch, if you configure a two-color policer with a burst size limit of less than 1 megabyte, the policer might not police traffic to the specified bandwidth limit. [PR/814055]
- On a QFX3500 switch, if you configure dynamic ARP inspection (DAI), valid ARP packets might be blocked and 40-Gigabit Ethernet (xle) interfaces might not receive these ARP packets. [PR/827819]
- On a QFX3500 switch, the **ttl** and **hop-count** statements at the **[edit firewall family inet6 filter filter-name term term-name from]** hierarchy level might be missing in the context-sensitive help for this configuration level. [PR/830133]
- On a QFX3500 switch, a problem can occur if you configure three firewall filters and the following is true for each filter:
 - Each filter has 255 terms.
 - The first 128 terms in each filter include a **three-color-policer** statement.

In this situation, the third filter might not be installed by the system.

To prevent this problem, change the order of the terms in the third filter so that the terms without a **three-color-policer** statement are configured before the terms that have a **three-color-policer** statement. If this does not correct the problem, make the same change to the first two filters. [PR/838135]

Storage

- On a QFX3500 switch, the message **Load Rebalance is In-Progress** is displayed after you execute the **request fibre-channel proxy load-rebalance fabric fabric name** operational command, even if the load does not need to be rebalanced. [PR/830302]

System Administration

- On a QFX3500 switch or QFX3600 switch, if both Dynamic Host Control Protocol (DHCP) and automatic software upgrade (Zero Touch Provisioning) are enabled, the QFX3500 switch or QFX3600 switch broadcasts a DHCP DISCOVER packet every 6 minutes. If a DHCP server on the network responds with a DHCP ACK packet with DHCP

vendor options set with the necessary values to initiate an automatic software upgrade, then the automatic software upgrade proceeds.

To disable broadcasting the DHCP DISCOVER packet every 6 minutes, without performing an automatic software upgrade, manually delete the **auto-image-upgrade** statement located in the **[edit chassis]** hierarchy. If an automatic software upgrade finishes without errors, the **auto-image-upgrade** statement is automatically deleted.

You can monitor the status of an automatic software upgrade in progress by looking at the following log files:

- `/var/log/dhcp_logfile`
- `/var/log/image_load_log`

[PR/834103]

User Interface and Configuration

- On a QFX3500 switch, you can use the **vlan** *vlan-name* **interface** *interface-name* **mapping-range** statement to map a range of customer VLANs to a range of service VLANs instead of using multiple **vlan** *vlan-name* **interface** *interface-name* **mapping** (**push** | **swap**) statements to configure Q-in-Q tunneling or VLAN translation on a per-VLAN basis. If you enter the first statement and configure a range in which the first value is larger than the second value (which is unsupported), you see an error message that does not clearly describe the problem. [PR/728938]
- On a QFX3500 switch, the log messages of IP addresses assigned by the DHCP server are not displayed unless the **level** flag is set in the **traceoptions** file. [PR/729571]
- On QFX3500 switches, although the **igmp-snooping** statement at the **[edit routing-instances instance-name protocols]** hierarchy level is visible, it is not supported. When you configure IGMP snooping in a routing instance, the configuration does not work. [PR/729629]
- On the QFX Series, if you configure an interface range and make the range a member of a VLAN, a problem occurs if you later remove an interface from the range. In this situation, the interface that you remove from the range is not removed from the VLAN. [PR/780290]

Related Documentation

- [New Features in Junos OS Release 12.3 for the QFX Series on page 3](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Limitations in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Errata in Documentation for Junos OS Release 12.3 for the QFX Series on page 17](#)
- [Upgrade and Downgrade Instructions for Junos OS Release 12.3 for the QFX Series on page 17](#)

Errata in Documentation for Junos OS Release 12.3 for the QFX Series

This section lists an outstanding issue with the documentation.

CLI Help

- On the QFX3500 and QFX3600 switches, CLI help documentation for the QFX Series is not available in Junos OS Release 12.3X50-D10.

Related Documentation

- [New Features in Junos OS Release 12.3 for the QFX Series on page 3](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Limitations in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Outstanding Issues in Junos OS Release 12.3 for the QFX Series on page 10](#)
- [Upgrade and Downgrade Instructions for Junos OS Release 12.3 for the QFX Series on page 17](#)

Upgrade and Downgrade Instructions for Junos OS Release 12.3 for the QFX Series

This section discusses the following topics:

- [Upgrading Jloader Software on QFX Series Devices on page 17](#)
- [Procedure for Upgrading CoS from Junos OS Release 11.1 or Release 11.2 to Release 11.3 or Later on page 19](#)
- [CoS Upgrade Requirements from Junos OS Release 12.1 to Junos OS Release 12.2 and Later on page 20](#)
- [Upgrading Software on QFX3500 and QFX3600 Standalone Switches on page 22](#)
- [Upgrade and Downgrade Support Policy for Junos OS Extended End-of-Life Software Releases on page 24](#)

Upgrading Jloader Software on QFX Series Devices

Jloader software contains a boot loader (Uboot), which is used to bring up QFX Series devices and load Junos OS from the flash memory of these devices. You can upgrade Jloader software on QFX3500 and QFX3600 switches, QFX3500 and QFX3600 Node devices, and QFX3600-I and QFX3008-I Interconnect devices.

On the QFX3500 and QFX3600 switches, additional diagnostic functionality is included with the latest Jloader software for internal Juniper Networks processes.



NOTE: Before you upgrade the Jloader software, see [Table 1 on page 18](#) to make sure that you are upgrading to the right version of Jloader software for the Junos OS software release running on your QFX3500 and QFX3600 switches.

See [Table 2 on page 18](#) to see which Uboot software versions are available and the filenames of the Jloader software packages.

Table 1: Junos OS and Jloader Software Compatibility Matrix for the QFX3500 Switch and QFX3500 Node Device

Junos OS Software Version	Jloader Software Version				
	1.0.73	1.1.1	1.1.2	1.1.4	1.1.5
11.3R1 and later (QFX3500 switch)	Not supported	Supported	Supported	Supported and recommended	Not supported
11.3X30.6 and later (QFX3500 Node device)	Not supported	Supported	Supported	Supported and recommended	Not supported
12.1X49-D1 and later (QFX3500 switch)	Not supported	Supported	Supported	Supported and recommended	Not supported
12.2X50-D10 and later (QFX3500 switch and QFX3500 Node device)	Not supported	Supported	Supported	Supported and recommended	Not supported

Table 2: Uboot Software Release and Jloader Software Compatibility Matrix

Uboot Software Release Number	JLoader Package Names
1.0.73	jloader-qfx-1_0_73.tgz
1.1.1	jloader-qfx-11.3-20110510.0-signed.tgz
1.1.2	jloader-qfx-11.3X30.9-signed.tgz
1.1.4 (Junos OS Release 11.3R3 and 11.3R2 releases only. Not supported on Junos OS Release 11.3R1)	jloader-qfx-11.3I20120127_0733_dc-builder-signed.tgz
1.1.4 (Junos OS Release 12.1R1 release and later)	jloader-qfx-12.1-20120125_pr.0-signed.tgz
1.1.5 (Junos OS Release 12.2X50-D10 and later)	jloader-qfx-12.2X50-signed.tgz

For more information, see:

- [Upgrading Jloader Software on QFX Series Devices](#)
- Product Support Notification (PSN) document

To view the PSN document:

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 download page, select the QFX Series platform software you want to download.
3. Select the number of the software version that you want to download in the Release pull-down window to the right of the tabs on the Download Software page.
4. Select the **Software** tab and then select the install package you want to download in the Install Package section.
5. In the pop-up Alert box, click the link to the PSN document.

Outstanding Issues in the Jloader Software

The following issues are outstanding in the Jloader software. The identifier following the description is the tracking number in our bug database.

- On the QFX Series, vccpdf adjacencies are not formed for the small form-factor pluggable (SFP) ports on the Interconnect device because of CPU GMAC4 traffic failure. [PR/669127]
- On a QFX3500 switch, add support for the Optical Management module. This is a new management module that changes C0 and C1 ports from copper to small form-factor pluggable (SFP) interfaces. [PR/684901]

Procedure for Upgrading CoS from Junos OS Release 11.1 or Release 11.2 to Release 11.3 or Later

Before you upgrade to Junos OS Release 11.3 or later, you must deactivate the CoS configuration on the QFX3500 switch if the CoS configuration uses the excess-rate option, strict-high or high priority queues, or any of the default multidestination forwarding classes. For full information about this topic, see [Overview of CoS Upgrade Requirements \(Junos OS Release 11.1 or 11.2 to a Later Release\)](#). A summary of the upgrade steps is included here.

After you upgrade to Junos OS Release 11.3 or later, modify the CoS configuration on the QFX3500 switch to conform to the Junos OS Release 11.3 or later CoS requirements. Then activate the CoS configuration and commit the changes:

1. Deactivate the CoS configuration.
`user@switch# deactivate class-of-service`
2. Upgrade to Junos OS Release 11.3 or later.
3. Make the following changes to the CoS configuration:
 - Remove the excess-rate option from the CoS configuration if you have used it at the `[edit class-of-service schedulers]` or `[edit class-of-service traffic-control-profiles]` hierarchy level.

- Remove the default multidestination forwarding classes (mcast-be, mcast-af, mcast-ef, and mcast-nc) if you have used them at the **[edit class-of-service schedulers]**, **[edit class-of-service rewrite-rules]**, or **[edit class-of-service classifiers]** hierarchy level. Alternatively, you can change the mapping of the multidestination traffic to use the new default multidestination forwarding class (mcast).
- 4. If desired, configure strict-high priority queues in accordance with the Junos OS Release 11.3 or later strict-high priority queue rules, and map multidestination traffic to the default multidestination forwarding class (mcast).
- 5. Activate the CoS configuration.
`user@switch# activate class-of-service`
- 6. Commit the CoS configuration.



NOTE: If you have configured the **transmit-rate** option for any queues at the **[edit class-of-service schedulers]** hierarchy level, if the rate is configured as an exact rate in Mbps, we recommend that you reconfigure the **transmit-rate** option as a percentage. This is because the scheduler converts exact rates to percentages, and when the exact rate is below 1 Gbps, some granularity may be lost in the conversion. You can avoid this potential issue by specifying the **transmit-rate** option as a percentage.

CoS Upgrade Requirements from Junos OS Release 12.1 to Junos OS Release 12.2 and Later

Before you upgrade to Junos OS Release 12.2 or later, you might need to edit the class-of-service (CoS) configuration because the way the QFX Series handles lossless forwarding classes has changed starting with Junos OS Release 12.2.

By default, the fcoe and no-loss forwarding classes are mapped to output queue 3 and output queue 4, respectively. These are the only two forwarding classes (and the only two queues) that support lossless transport.

In Junos OS Release 12.1 and earlier, explicitly setting the lossless fcoe and no-loss forwarding classes resulted in the same CoS behavior as using the default configuration. However, in Junos OS Release 12.2 and later, the behavior when you explicitly configure the lossless forwarding classes differs from the behavior when you use the default forwarding classes.



NOTE: The default behavior differs from the explicit configuration behavior even if the explicit configuration is exactly the same as the default configuration.

- If you use the default forwarding class configuration for the lossless queues (the configuration does not include explicit setting of the fcoe or the no-loss forwarding classes), then the fcoe and no-loss queues behave as lossless queues.

If your CoS configuration does not explicitly configure the fcoe and no-loss forwarding classes, you can upgrade from Junos OS Release 12.1 to Junos OS Release 12.2 and later and the behavior of the two lossless queues remains lossless.

- If your configuration includes statements that explicitly configure the fcoe or the no-loss forwarding class (using the **[set class-of-service forwarding-classes class *class-name* queue-num *queue-number*]** statement), after you upgrade to Junos OS Release 12.2 or later, those queues do *not* receive lossless treatment and behave as lossy (best-effort) queues.

If your CoS configuration explicitly configures the fcoe and no-loss forwarding classes, to retain the lossless behavior of those queues, you need to remove the explicit configuration for these two forwarding classes from the CoS configuration *before* you upgrade.

If you upgrade to Junos OS Release 12.2 or later and the fcoe and no-loss forwarding classes are explicitly configured, then those two queues continue to be used, but the traffic is treated as lossy traffic, not lossless traffic. To make the queues for these two forwarding classes lossless, you must delete the explicit forwarding class configuration.



CAUTION: If you explicitly configured the fcoe or the no-loss forwarding class, and you upgrade to Junos OS Release 12.2 or later, the system does not return an upgrade error or a commit error, or generate a syslog message to notify you that these forwarding classes are no longer lossless. Traffic mapped to these forwarding classes is not treated as lossless traffic until you remove the explicit forwarding class configuration.

Before you upgrade, delete the fcoe and no-loss forwarding classes from the explicit configuration to preserve the lossless behavior of traffic mapped to these forwarding classes.

- To delete the explicit fcoe forwarding class configuration:

```
[edit]
user@switch# delete class-of-service forwarding-class class fcoe queue-num 3
user@switch# commit
```

- To delete the explicit no-loss forwarding class configuration:

```
[edit]
user@switch# delete class-of-service forwarding-class class no-loss queue-num 4
user@switch# commit
```



NOTE: If you try to delete these forwarding classes and they have not been explicitly configured on the system, the system returns the message **warning: statement not found**. This simply means that there is no explicit configuration to delete and does not change the lossless behavior of the fcoe and no-loss forwarding classes.

After you delete the explicit configuration for the fcoe and no-loss forwarding classes, traffic mapped to those forwarding classes retains its lossless behavior after the upgrade to Junos OS Release 12.2 or later.

- If you have a Layer 3 classifier attached to a nonzero unit of an interface, we recommend that you deactivate the CoS configuration before you upgrade from Junos OS Release 12.1 to a later Junos OS release. Alternatively, you can delete the following configuration hierarchy for each Layer 3 interface: **set class-of-service interfaces *interface-name* unit *unit-number* classifiers**. Although the CLI in Junos OS Release 12.1 permitted you to assign a Layer 3 classifier to a logical interface, Layer 3 classifiers on logical interfaces are not supported on the QFX Series.

Upgrading Software on QFX3500 and QFX3600 Standalone Switches

When upgrading or downgrading Junos OS, always use the jinstall package. Use other packages (such as the jbundle package) only when so instructed by a Juniper Networks support representative. For information about the contents of the jinstall package and details of the installation process, see the [Junos OS Installation and Upgrade Guide](#) and [Junos OS Basics](#) in the QFX Series documentation.



NOTE: You cannot upgrade by more than three releases at a time. For example, if your routing device is running Junos OS Release 11.1, you can upgrade to Junos OS Release 11.3 but not to Junos OS Release 12.1. As a workaround, first upgrade to Junos OS Release 11.3 and then upgrade to Junos OS Release 12.1.



NOTE: In some cases, when you downgrade the QFX3500 switch to an earlier software version, the switch might not operate properly. As a workaround, choose one of the following options when downgrading:

1. Issue the **request system software add** command to downgrade to the following or later software versions:
 - Junos OS Release 11.1R5
 - Junos OS Release 11.2R2
 - Junos OS Release 11.3R1
2. Include the **no-validate** option when you issue the **request system software add** command during a downgrade to a software version earlier than the ones listed in option #1.

The download and installation process for Junos OS Release 12.3 is the same as for previous Junos OS releases.

If you are not familiar with the download and installation process, follow these 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.

3. Select **12.3** in the Release pull-down list to the right of the Software tab on the Download Software page.
4. In the Install Package section of the Software tab, select the QFX Series Switch Install Package for the 12.3 release.

An Alert box appears.
5. In the Alert box, click the link to the PSN document for details about the software, and click the link to download it.

A login screen appears.
6. Log in to the Juniper Networks authentication system using the username (generally your e-mail address) and password supplied by Juniper Networks representatives.
7. Download the software to a local host.
8. Copy the software to the device or to your internal software distribution site.
9. Install the new jinstall package on the device.



NOTE: We recommend that you upgrade all software packages out of band using the console, because in-band connections are lost during the upgrade process.

Customers in the United States and Canada use the following command:

```
user@host> request system software add validate  
source/jinstall-qfx-12.3X50D10.3-domestic-signed.tgz reboot
```

Replace **source** with one of the following values:

- **/pathname**—For a software package that is installed from a local directory on the switch.
- For software packages that are downloaded and installed from a remote location:
 - **ftp://hostname/pathname**
 - **http://hostname/pathname**
 - **scp://hostname/pathname** (available only for Canada and U.S. version)

The **validate** option validates the software package against the current configuration as a prerequisite to adding the software package to ensure that the switch reboots successfully. This is the default behavior when the software package being added is a different release.

Adding the **reboot** command reboots the switch after the upgrade is validated and installed. When the reboot is complete, the switch displays the login prompt. The loading process can take 5 to 10 minutes.

Rebooting occurs only if the upgrade is successful.



NOTE: After you install a Junos OS Release 12.3 jinstall package, you cannot issue the `request system software rollback` command to return to the previously installed software. Instead you must issue the `request system software add validate` command and specify the jinstall package that corresponds to the previously installed software.

Upgrade and Downgrade Support Policy for Junos OS Extended End-of-Life Software Releases

Support for upgrades and downgrades that span more than three Junos OS releases at a time is not provided, except for releases that are designated as Extended End-of-Life (EEOL) releases. EEOL releases provide direct upgrade and downgrade paths—you can upgrade directly from one EEOL release to the next EEOL release even though EEOL releases generally occur in increments beyond three releases. You can upgrade or downgrade to the EEOL release that occurs directly before or after the currently installed EEOL release, or to two EEOL releases before or after. However, you cannot upgrade directly from a non-EEOL release that is more than three releases before or after.

To upgrade or downgrade from a non-EEOL release to a release more than three releases before or after, first upgrade to the next EEOL release and then upgrade or downgrade from that EEOL release to your target release. For more information on EEOL releases and to review a list of EEOL releases, see [Junos Software Release Dates and Milestones](#).

Related Documentation

- [New Features in Junos OS Release 12.3 for the QFX Series on page 3](#)
- [Changes in Default Behavior and Syntax in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Limitations in Junos OS Release 12.3 for the QFX Series on page 7](#)
- [Outstanding Issues in Junos OS Release 12.3 for the QFX Series on page 10](#)
- [Errata in Documentation for Junos OS Release 12.3 for the QFX Series on page 17](#)

QFX Series Documentation for Junos OS Release 12.3

Title	Description
<i>QFX3500 Device Hardware Documentation</i>	Component descriptions, site preparation, installation, replacement, and safety and compliance information for QFX3500 devices
<i>QFX3600 Device Hardware Documentation</i>	Component descriptions, site preparation, installation, replacement, and safety and compliance information for QFX3600 devices
<i>Complete Software Guide for Junos OS for the QFX Series, Release 12.3</i>	Software feature descriptions, configuration examples, and tasks for Junos OS for the QFX Series
<i>Junos OS Software Release Notes for the Juniper Networks QFX Series, Release 12.3X50-D10 (this document)</i>	Summary of hardware and software features, and known problems with the software and hardware

Requesting Support

For technical support, open a support case with the Case Manager link at <http://www.juniper.net/customers/support/>, email the technical assistance center (TAC) at 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 January 2013—Revision 3, Junos OS for the QFX Series, Release 12.3X50-D10

08 January 2013—Revision 2, Junos OS for the QFX Series, Release 12.3X50-D10

20 December 2012—Revision 1, Junos OS for the QFX Series, Release 12.3X50-D10

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