

# Release Notes

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## Junos<sup>®</sup> OS Evolved 19.1R2 Release Notes

### HARDWARE HIGHLIGHTS

- Support for Junos OS Evolved on the QFX5220 switch
- Support for Junos OS Evolved on the PTX10003-80C and PTX10003-160C Fixed Packet Transport Routers

### SOFTWARE HIGHLIGHTS

- Profile image delivered
- Zero Touch Provisioning support
- Run your own applications in containers
- Component-level upgrade

# Release Notes: Junos<sup>®</sup> OS Evolved Release 19.1R2 for the PTX10003 Router and QFX5220 Switch

13 August 2021

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# Introduction

Junos OS Evolved is the next-generation Junos OS. It has the same CLI, the same features, and, in some cases, even the same processes as previous versions of Junos OS. But its infrastructure is entirely modernized.

Use these release notes to find new and updated features, software limitations, and open issues for Junos OS Evolved Release 19.1R2.

These release notes are cumulative and are updated for later releases.

For more information on this release of Junos OS Evolved, see [Introducing Junos OS Evolved](#).

# Junos OS Evolved Release Notes for PTX10003 Devices

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These release notes accompany Junos OS Evolved Release 19.1R2 for PTX10003 devices. They describe new and changed features, limitations, and known and resolved problems in the hardware and software.

## What's New

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Learn about new features introduced or changed features in the main release and maintenance releases of Junos OS Evolved for PTX10003 devices.

## What's New in Junos OS Evolved Release 19.1R2

### *Software Installation and Upgrade*

- **Component-level upgrade available**—The upgrade command provides for restarting applications and nodes in an optimal manner. You use one upgrade command, **request system software add**, and by default, the upgrade process identifies upgrades only those components that differ in the target release. An option to the upgrade command allows you to perform the equivalent of a cold boot upgrade should it be required. Output specifies whether the software is upgraded using cold boot or by application restart.

## What's New in Junos OS Evolved Release 19.1R1

### *Authentication, Authorization, and Accounting*

- **RADIUS and TACPLUS functionality over IPv6 enabled**—RADIUS and TACPLUS over IPv6 functionality is added for the authentication, authorization, and accounting (AAA) system. Additionally, RADIUS and TACPLUS servers are reachable over Packet Forwarding Engine interfaces.

[See [RADIUS Authentication](#) and [TACACS+ Authentication](#).]

### *Class of Service*

- **Support for class of service**—Class of service functionality is supported except for per-VLAN queuing and shared buffer size in schedulers.

[See [Class of Service User Guide \(Routers and EX9200 Switches\)](#).]

### *General Routing*

- **Stateless DHCPv4 and DHCPv6 Relay can be configured to receive packets on a per-interface basis**—Stateless Dynamic Host Control Protocol (DHCP) means the feature does not maintain state or records of lease times and bindings. Broadband Edge Subscriber management and subscriber services such as AAA are not supported.

[See [DHCP Relay Proxy Overview](#).]

### *Hardware*

- **PTX10003-80C and PTX10003-160C Fixed Packet Transport Routers**—Junos OS Evolved Release 19.1R1 introduces two fixed-configuration core routers in a compact, 3 U form factor that is easy to deploy in space-constrained Internet exchange locations, remote central offices, and embedded peering points throughout the network, including cloud-hosted services. The PTX10003 builds upon Juniper Networks ExpressPlus™ silicon concepts of low consistent latency and wire-rate packet performance for both IP traffic and MPLS transport, without sacrificing the optimized system power profile. The PTX10003 uniquely addresses power-constrained environments by providing unprecedented power efficiency of 0.2 watts/Gbps. Two models with differing capacities are available. The PTX10003-160C supports 16 Tbps throughput and the PTX10003-80C supports 8 Tbps throughput—each in a compact 3 U footprint.

- **Chassis management support**—Using the chassis management software, you can manage and control field replaceable units (FRUs), monitor system health, set chassis alarms, and handle system faults. However, taking an FPC online by using the **request chassis fpc slot-number online** command is not supported.

[See [Chassis-Level User Guide](#).]

- **Fabric management support (PTX10003-160C and PTX10003-80C)**—Each of these devices supports two Fabric Chips. The PTX10003-160C devices have 32 Packet Forwarding Engines each, while the PTX10003-80C devices have 16 Packet Forwarding Engines each. The fabric supports a link speed of 53.125 Gbps. Both Fabric Chips are always present. The devices support fabric degradation and blackholing detection. The devices do not support fabric redundancy and fabric fault handling per plane. However, fault handling is supported per link error.

[See [Fabric Plane Management](#).]

- **Power budgeting and management support**—The PTX10003-80C devices support two power supply modules (PSMs) each and provide 1+1 redundancy. The PTX10003-160C devices support four PSMs each and provide 2+2 redundancy. Configuration of ambient temperature (25°C and 40°C) and dynamic power management is supported. However, configuration of the ambient temperature value 55°C is not supported.

[See [Managing Power](#).]

- **Resiliency support (PTX10003-80C and PTX10003-160C)**—Each of these devices support platform resiliency. All error conditions are detected and logged. Wherever applicable, alarms are reported, traps are generated, and FRU level actions like reset, offline, or disable are performed.

### ***Interfaces and Chassis***

- **Support for 10-Gbps, 40-Gbps, 100-Gbps channelization using QSFP+/QSFP28/QSFP28 DD Optics (PTX10003)**—These platforms support the following optics:
  - QSFP+ optics support 4x10 Gbps or 1x40 Gbps
  - QSFP28 optics support 1x100 Gbps
  - QSFP28-DD optics support 2x100 Gbps

Each optical port can have a configured port speed. Using the appropriate optics, you can channelize the speed of the ports to 10-Gbps, 40-Gbps, or 100-Gbps speeds. If no port speed is configured on a valid optical port, a default port speed of 2x100G is used. Speed can be configured at the PIC or port level. At the port level, channelize the ports by using the **number-of-subports** configuration statement.

[See [Channelizing Interfaces on PTX10003 Routers](#)]

- **Interfaces and chassis features supported:**
  - Digital optical monitoring (DOM)
  - Forwarding features supported on the Packet Forwarding Engine:



- Forwarding IPv4 and IPv6
- Firewall filters
- Load balancing
- MPLS fast reroute
- Forwarding IPv6 transit statistics
- Host path egress peer engineering
- IPv6 traffic can transport over IPv4 MPLS core network

[See the [BGP User Guide](#).]

- J-Insight Device Monitoring feature support (only the fault monitoring functionality is supported in Junos OS Evolved)
- Management Ethernet interface (re0:mgmt-0) is confined in a non-default virtual routing and forwarding table—[Management Interface in a Nondefault Instance](#)
- Unicast reverse-path-forwarding (RPF) (supported for the IPv4 and IPv6 protocol families, as well as for the virtual private network [VPN] address family)

### *Junos Telemetry for Interfaces*

- **Junos Telemetry Interface (JTI) support**—OpenConfig support through gRPC and JTI is available for the following telemetry sensors that were previously only supported in Junos OS:
  - Sensor for Routing Engine internal interfaces (physical interface state and statistics)
  - Sensor for Routing Engine internal Logical interfaces (logical interface state and statistics)
  - Sensors for ARP
  - Sensor for Network Discovery Protocol (NDP)
  - Sensor for operational state of AE with LACP
  - Sensor for operational state of LLDP (neighbors information)

To provision the sensor to export data through gRPC streaming, use the **telemetry Subscribe** RPC to specify telemetry parameters. Streaming telemetry data through gRPC also requires the OpenConfig and Network Agent packages, both of which are bundled into the Junos OS image in a default package named `junos-openconfig`.

[See [Configuring a Junos Telemetry Interface Sensor \(CLI Procedure\)](#).]

- **Fewer external packages**—Network Agent (NA) and OpenConfig (OC) packages are provided as part of the Junos OS Evolved image.
- **Packet Forwarding Engine sensors are supported through Junos Telemetry Interface (JTI)**—Use the following resource paths to export statistics to an outside collector through gRPC streaming:

- /interfaces/interface/
- /interfaces/interface/subinterfaces/
- /interfaces/interface[name='interface-name']/subinterfaces/
- /junos/system/linecard/packet/usage/
- /junos/system/linecard/firewall/
- /junos/services/label-switched-path/usage/

From Junos OS Evolved, you must also include the **sensor-based-stats** statement at the **[edit protocols mpls]** hierarchy level to enable sensor-based statistics collection for the MPLS protocol. As was standard for Junos OS, Network Agent (NA) and OC packages are part of the Junos OS Evolved image. Both packages are necessary to support this feature.

### **Management**

- **Management features supported:**
  - Chef and Puppet provided as third-party applications, as part of the Junos OS Evolved image—[Chef for Junos OS Getting Started Guide](#) and [Puppet for Junos OS Administration Guide](#)
  - JET APIs (only management and rpd APIs and gRPC client request-response—not Thrift—are supported)
  - XSLT, SLAX, and Python scripts (which can trigger CLI operations)
  - YANG modeling

### **Network Management and Monitoring**

- **Read Junos OS network information using Linux tools**—On devices running Junos OS Evolved, preload the intercept library libnli.so in order to obtain network information in the same format as the output you get on a device running Junos OS. The one difference is the name of the logical interface. Junos interface names must be translated into a different form, which is accomplished by a translation rule.  
[See [Running Linux Tools on Junos OS Evolved](#).]
- **sFlow support**—sFlow is a monitoring technology for high-speed switched or routed networks. An sFlow monitoring system consists of an sFlow agent embedded in the router and a monitoring station called a collector. sFlow randomly samples network packets and sends the samples as UDP datagrams to the IP address and UDP destination port of the collector.  
[See [Understanding How to Use sFlow Technology for Network Monitoring](#).]
- **Standard and enterprise-specific MIBs supported**—“[Appendix A: Standard MIBs for Junos OS Evolved on PTX10003 and QFX5220 Devices](#)” on page 33, “[Appendix B: Enterprise-Specific MIBs for Junos OS Evolved on PTX10003 and QFX5220 Devices](#)” on page 39, and the [SNMP MIB Explorer](#)

### ***Routing Protocols***

- **Support for 128-way ECMP for MPLS transit case**—Equal-cost multi-path routing (ECMP) is a supported routing strategy. The following features do not support 128-way ECMP: multicast, P2MP, MC-LAG, weighted unicast, consistent hashing, link protection (MPLS), adaptive load balancing, and class-based forwarding.

[See [Example: Load Balancing BGP Traffic](#).]

### ***Security***

- **Secure Boot**—A significant system security enhancement, Secure Boot, has been introduced in this release of Junos OS Evolved. The Secure Boot implementation is based on the UEFI 2.4 standard. The BIOS has been hardened and serves as a core root of trust. The BIOS updates, the bootloader, and the kernel are cryptographically protected and thus safeguarded from tampering or modification. Secure boot is enabled by default on supported platforms.

[See [Junos OS Overview](#).]

### ***Software Installation and Upgrade***

- **Zero touch provisioning (ZTP) support**—ZTP can dramatically reduce the time to provision the network in a data center and decrease the opportunity for introduction of human error into the network. The image and configuration files are placed centrally in a network server. The device is shipped with factory default configuration along with ZTP configuration. Upon booting up, the device downloads the image from the central location, upgrades itself and, upon rebooting, applies the configuration which it fetched from the network server.

[See [Zero Touch Provisioning](#).]

- **Root password recovery supported**—You can reset the root password without doing a reset-to-factory. Through this procedure, only the root password is reset to a known value; all the other functions and state of the device remain unaffected. In a fixed form server, this operation is performed on the serial console of the primary control node.

[See [Recovering the Root Password for Junos OS Evolved](#).]

- **Snapshot feature is supported**—The snapshot feature copies the current running version and its state at the time of the snapshot to a secondary boot device. If the primary boot device fails, you can use the snapshot to boot the system or recover it without the need for an onsite visit. To have a snapshot, you must run the **request system snapshot** CLI command—it is not automatic. The **show system snapshot** command shows the snapshot device information and the software versions installed on snapshot device.

### System Management

- **Run your own applications in LXC or Docker containers**—In Junos OS Evolved, you can run your applications natively or install and run your own applications inside containers. You can run third-party applications in two types of containers: LXC containers and Docker containers.

[See [Running Third-Party Applications in Containers](#).]

## What's Changed

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Learn about what's different in behavior and syntax in Junos OS Evolved for PTX10003 devices.

## Changes in CLI Statements and Commands

- To see the list of CLI statements and commands changed in Junos OS Evolved, see *How Junos OS Evolved Differs from Junos OS* in the *Introducing Junos Os Evolved Guide*.

## Authentication, Authorization, and Accounting

- **Passwordless login required for remote connection**—Interactive passwords are not supported. For remote connection without authentication issues, you must configure a passwordless login.

## General Routing

- On PTX10003-80C and PTX10003-160C devices, Native Command Queuing (NCQ) is not disabled for SSDs by default. NCQ allows hard disk drives to internally optimize the order in which the read and write commands are executed.
- The process eventd will not throw any warning message if there are duplicate policies. For example, if event-script and user-configured event policies from the CLI have the same name, eventd accepts the policy on a first-come, first-served basis.
- The v6 hash-key field is not enabled as default. To enable it, issue the following CLI configuration command: **set forwarding-options hash-key family inet6 layer-3**. This is different behavior from behavior in Junos OS, in which the v6 hash-key is enabled by default.

## Installation and Upgrade

- TPM upgrade is not supported in this release of Junos OS Evolved.

## Interfaces and Chassis

- On the PTX10003-80C and PTX10003-160C devices, deleting the FPC power off configuration during run time might trigger the FPC to go online and that might result in a system crash. This is because these routers do not support taking FPC online (using the command **request chassis fpc slot-number online**). We recommend that you delete the power-off configuration when you are ready to reboot the router (that is, delete the configuration just before rebooting the router).
- On PTX10003-80C and PTX10003-160C devices, the **show chassis fpc** command does not show any CPU or memory utilization information because the PTX10003-80C device is a fixed-configuration router and the FPCs in it do not have dedicated CPUs.

## Network Management and Monitoring

- In Junos OS Evolved, `snmpd` runs as a 64-bit application. When a value of 4294967295678 is passed to `counter32`, the value returned is read from the lower order 4 bytes, which is 4294966974 (or 4294967295678 and FFFFFFFF).
- Whereas Junos OS products display a kernel message on console when a USB device is plugged in or unplugged, Junos OS Evolved products do not print this message on the console. The logs can be seen in either the log files or the list of plugged-in USB devices that can be seen by invoking `lsusb` or `lsblk` from the shell.

## Routing Policies and Firewall Filters

- **Separate filters for management and control traffic**—In Junos OS Evolved, you can have two different filters: one for network control traffic (loopback traffic) and one for management traffic. With two filters, you have more flexibility. For example, you can configure a stricter filter on management interface traffic than on network control traffic. Management filtering uses Routing Engine filters based on netfilters, a framework provided by the Linux kernel. This difference results in only certain matches and actions being supported.

[See [Stateless Firewall Filter Overview](#).]

- Output filter binding on `RtTable` is not supported.

## Routing Protocols

- **BGP flowspec filters not listed**—In Junos OS Evolved, the `show firewall terse` command only CLI-based firewall filters are listed, not BGP flowspec filters. In Junos OS, both are listed.

## System Management

- For Junos OS Evolved, a core during early bootup is stored in `/var/core/re`. But a core later in the bootup, for example, after the Routing Engine slot number can be determined, is stored in `/var/core/re0` or `/var/core/re1`. The command `show system core-dumps` continues to show all cores generated. The location of the core would also be printed in the CLI command output. For Junos OS, all cores are stored at `/var/core/re`.

## User Interface and Configuration

- **FPC, PIC, or SIB commands changed:**
  - Taking a FPC, PIC, or SIB online by using the `request chassis fpc slot-number online` command is not supported.

- The following CLI command and configuration options have been deprecated:
  - **show chassis network-services**
  - **[edit chassis fpc slot error (fatal | major |minor) action offline-pic]**
- **The set option is deprecated in add and delete commands**—Starting in Junos OS Evolved Release 19.1R1, the **set** option is deprecated in both the **request system software add** and **request system software delete** commands.  
[See [request system software add](#) and [request system software delete](#).]
- **The source-fpc option is deprecated for the show interfaces voq command**—For platforms released starting in Junos OS Evolved Release 19.1R1 (PTX10003), there are only logical FPCs. Therefore, the **source-fpc** option is not required for this **show interfaces voq** command.  
[See [show interfaces voq](#).]
- **The show system uptime output changed**—The output of the **show system uptime** displays only the **System booted** and **System-wide users** information. The output does not display the details such as current time, system booted, protocols started, or last configured parameters.  
[See [show system uptime](#).]

## Known Behavior

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Learn about known behavior in Junos OS Evolved for PTX10003 devices.

## Authentication and Access Control

- Here template user authorization parameters are being tested, this functionality is not currently supported. Support for template user authorization is planned as part of RLI-38945 [PR1415949](#)

## General Routing

- PTX10003: Fabric stats PFE stats counter is always displayed as zero. No value is populated. [PR1389157](#)
- Platform system reboot design includes different behavior from Junos OS:
  1. System will always boot from a sticky boot device upon reboot (thais, it reboots from the previous successful boot device). The exception to this is that once system has booted up from USB or netboot and the scratch install is successful, the system should boot from the newly scratch-installed disk1 (primary ssd).
  2. If the previous boot device selected did not boot up successfully, the BIOS will cycle through the boot device list as per the order.
  3. After a USB device is hot-plugged in, if you want to boot from the USB, you need to use the **request system shutdown reboot usb** command or else reboot and select the **USB** from the BIOS menu.
  4. A power cycle will reset the boot order to the default list which starts from the primary disk (disk1).
- [PR1389196](#)
- Even though the CLI allows an MTU configuration of 9500, the maximum MTU in the forwarding path is restricted to 9416 bytes (including the 4-byte CRC) [PR1412018](#)
- Due to hardware limitation, IFL stats will be displayed only for parent IFL and not for child IFLs. [PR1412245](#)
- In its current form the evo-cda-zx process can consume a relative high amount (more than rpd) cpu in idle state. This is related to period statistics gathering. [PR1412651](#)
- PTX10003-80C/160C: ~0.4% drops are seen at line rate when packet sizes are below 170b [PR1415012](#)
- Customer TPID 0x88a8/0x9100 is not supporting with 19.1R1. [PR1415390](#)
- The "show interfaces extensive" command displays twice the actual packet count under IFL statistics output for traffic destined to the local interfaces on the switch. [PR1415487](#)
- Old severity error statistics for an URI getting updated under new severity, after changing the severity. [PR1417191](#)
- In SR configuration, the nexthop is leaked. On an EVO system, this prohibits the deletion of the IFL/IFD objects from completing. When the interface is deactivated in configuration, its possible that same ifl/ifd index is assigned, because the earlier IFL/IFD objects are not cleared aft-mand assert reason ifl/ifd index exist. [PR1418407](#)



- During frequent route updates or link flaps, the system may not achieve the full scale of 4K ECMP next-hops. [PR1419943](#)
- show interfaces to view traffic statistics doesn't show any traffic statistics for ipv6 [PR1421685](#)
- Restart of certain processes like CDA, AFTMAN, resiliD will cause the system to reboot. [PR1421993](#)
- Available Firmware version for all non supported firmware upgrade components will be shown as 0 in system firmware output. Firmware components not supported are TMC FPGA and CPLD components. Also there are redundant values shown under CHASSIS and RE for all the firmware components. [PR1422023](#)
- Host loopback wedge and alarm will be reported, when offline the fpc. [PR1422091](#)
- Restarting ifstats application may cause the hwdre process to restart. [PR1426687](#)

## Infrastructure

- FTP cannot be used if accessing the network through WAN interface. [PR1407787](#)

## Interfaces and Chassis

- LACP link protection is not supported. If one of the AE links goes down, the AE interface goes down.
- Setting or removing vlan-tagging on an interface can cause the physical interface to flap. A link flag during this event is not harmful.
- Output MPLS filters are not supported due to product limitation.

## User Interface and Configuration

- Corner case which has a workaround when hit. As the system will not be clogged with stale users, but merely the messages coming when user enters configure mode will not have any functional impact on the system. The issue will not be seen with the case of graceful reboot or a clean exit. Command "request system logout user regress terminal pts/0 " can be used to remove the stale user as a workaround. [PR1409851](#)
- For large yang file, augmentation may not work [PR1416972](#)
- On doing load override base.conf, management instance is being deleted. When committing this, commit hangs indefinitely. This happens because of VRF switch. It is expected behaviour. [PR1421947](#)
- Junos OS Evolved is not checking invalid configure when commit: "set interfaces ae0 gigether-options 802.3ad ae0" will be commit without error message. Which will be failed to commit in JUNOS. This may cause ifmand core. [PR1426018](#)

## Open Issues

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Learn about open issues in Junos OS Evolved for PTX10003 devices.

### Flow-based and Packet-based Processing

- JFLOW is not supported on the PTX10003. If you configure it the system may generate EvoAftMan-main and/or rpd-agent cores [PR1393101](#)

### General Routing

- Observing mgd unable to execute /usr/sbin/mtree for the cli show system audit. [PR1420984](#)
- ICMP mib table is not implemented in Junos OS Evolved and as such SNMP walk/get on this table will not yield any values. [PR1378659](#)
- Packets sent with incorrect IPV6 hop-by-hop type is not dropped. Same issue with IPv4. [PR1403686](#)
- Linkscan status reflects correctly and Interface state gets updated accordingly, but the RxLOS alarm gets set sometimes randomly even after link goes down. Reached out to HW team and working on the root cause. This issue may not get fixed in 19.1R1 timelines. [PR1404144](#)
- When multiple BGP session flaps happen in the system, the memory used for evo-aftmand process is seen to increase gradually and this memory is not released back to the system once the flaps stop happening. [PR1409261](#)
- The messages 'Em: root: route entry del failed, route does not exist prefix:0.0.0/24' and 'Em: root: route entry del failed, route does not exist prefix:0.0.32/24' will be seen after reverting to a baseline

configuration. No action needs to be taken, the delete fails because the routes were never installed. This does not cause any issues. [PR1414028](#)

- PTX10003-80C, and PTX10003-160C: fabspoked-pfe app is leaking 0.1% of memory after 70 iterations of both sib offline / online [PR1418123](#)
- evo-cda-zx errors are observed when FPCs are offline: Trigger: user@router> request chassis fpc slot 0 offline Fpc 0 offline initiated! user@router> request chassis fpc slot 1 offline Fpc 1 offline initiated! Result: user@router> show log messages evo-cda-zx[8679]: %USER-3: [Error] CDA :zxchip\_dlu\_cache\_enable(10699): PECHIP[24]: Bad zxchip (nil) or zxchip not initialized! evo-cda-zx[8679]: %USER-3: [Error] CDA: Error flusing/disable bloom filter cache pfeInst:24 status:22 evo-cda-zx[8679]: %USER-3: [Error] CDA :zxchip\_dlu\_lpm\_flush(10749): PECHIP[24]: Bad zxchip (nil) or zxchip not initialized! evo-cda-zx[8679]: %USER-3: [Error] CDA: Error: lpm flush pfeInst:24 status:22 evo-cda-zx[8679]: %USER-3: [Error] CDA: Error write to hash table pfeInst:24 status:22 [PR1418294](#)
- Sometimes "Socket error on client client-1-NA\_periodic\_subscriber, disconnecting" messages is not seen when sensor is unsubscribed using CTRL+C. Observed that in the log messages, when sensor is unsubscribed using CTRL+C then "Socket error on client client-xx-NA\_periodic\_subscriber, disconnecting" should come but sometime message is not seen but sensor gets deleted from the system and issue is specific to log messages. [PR1419223](#)
- At the time fpc offline, while offlining is in progress if due to some reason hwdr restarts, picd core is observed. Possibility of seeing this is very remote. [PR1419535](#)
- Following sensor values are not published in current Junos OS Evolved release, /junos/system/linecards/optics and few of the sensor values of /junos/system/linecards/interfaces In errors In discards Out errors Out discards In unicast pkts Out unicast pkts In broadcast pkts Out broadcast pkts In multicast pkts Out multicast pkts In pause pkts Out pause pkts [PR1419811](#)
- CM infra: Reset action programming need to be blocked for Minor error severity. However reset action is not supported, since the fpc does not support restart/reset. [PR1420654](#)
- When the export port flap happens due to pic going offline and there is a collector already connected, then JSD doesn't detect the change in the connection state and hence it doesn't relay the same info to the infra. Due to this, the installed sensors continue to stream data resulting into piling of recv Q and send-Q for na-grpcd and jsd. The issue resolves once the pic is up again and the new connection state is successfully detected by JSD resulting into unsubscriptions. [PR1420963](#)
- The 'show system audit' command will not be supported in 19.1R1-EVO [PR1420984](#)
- Few field will be missing in CLI "show system statistics arp" like , "Current Public ARP nexthops present " in comparison with junos. [PR1422197](#)
- Five errors belonging to same bucket are contributing to the alarm, with bucket level threshold higher than 1 (threshold=3 in this PR) . On doing clear-all, alarm is not getting cleared. [PR1422728](#)
- irp\_intr\_smp\_trap error messages are seen on PTX10003 console while bouncing the IGP protocols and restart routing daemon. [PR1422881](#)

- In some cases, 100G SR4 optics do not link up intermittently during a reboot of the switch. A soft OIR (interface disable/enable via CLI ) recovers the links from this state. [PR1422884](#)
- PTX10003-160C and PTX10003-80C: COS AE Queue stats for the "show interfaces queue ae0" CLI command is displayed as zero for ~3 mins (where as the rate/pps/bps stats are displayed correctly) after the "clear interfaces statistics all" commands and when one AE member link flaps (24x10G ae0) [PR1423134](#)
- GNMI support is not enabled on PTX10003-80C JTI now, configuring a sensor with GNMI support will result in unexpected behavior. [PR1423548](#)
- When multiple BGP session flaps happen in the system, the memory used for fibd process is seen to increase gradually and this memory is not released back to the system once the flaps stop happening. [PR1423625](#)
- If filter with a term of 1514 is applied on full PFEs then full line rate at PFE level can not be achieved from 168-190 packet type. [PR1424351](#)
- When Highly Accelerated Life Test is carried out on PTX10003 FPC Error messages "pgq\_intr\_misctr\_qsn\_skip" will be seen on the console [PR1424539](#)
- addition of new terms in firewall filter as a secondary match can cause traffic issue. [PR1424566](#)
- Sometimes in the presence of multiple triggers like process restarts a hardware crash with a core dump is observed. The system does recover with no functional impact. [PR1425242](#)
- When Highly Accelerated Life Test is carried out on PTX10003 FPC Error messages "egp\_intr\_pkt\_trapcode" seen on the console [PR1425508](#)
- Sflow collector may not received sflow data with ingress or egress sampling. [PR1425949](#)
- Memory leak seen when doing mpls related config/event/trigger, It does not impact the protocol state or traffic flow. [PR1425989](#)
- On USB plugin while the chassis is Up and running, in PTX10003-80C/PTX10003-160C Chassis, CLI "show chassis hardware detail" shows details USB Disk under Hardware inventory Item only after system reboot. [PR1426154](#)
- When physical links were removed and plugged back in immediately under a sec, there is intermittent chance that link might not be UP. [PR1426541](#)

## Infrastructure

- The SSH and telnet server are accessible via the management interface in this release, these servers are not available from the WAN interfaces. [PR1310556](#)
- After swapping management and console cable and reverting back, console LED is not functional and is not coming up. [PR1417226](#)

- In Some scenarios immediately after a software upgrade, hostname in IS-IS database shows up as "localhost". Flapping the IS-IS session will clear this. This problem will not be seen in subsequent reboots after the software upgrade. [PR1419006](#)
- During boot installation ntpd.service is failed to start in the scenario when upgrade is done by selecting boot from GRUB menu [PR1421946](#)
- On Junos OS Evolved software, ISIS adjacency will not come up on GR interfaces. [PR1425435](#)

## Interfaces and Chassis

### Multiprotocol Label Switching (MPLS)

- In a scale scenario of million routes and thousands of LSPs, "show mpls lsp statistics" will be slow due to high volume of route installation and statistics queries. [PR1416363](#)

### Routing Protocols

- The command "show pfe route summary" is not supported [PR1405448](#)
- RP and FHR not supported on PTX10003-80C in this release. [PR1414780](#)
- Hidden BGP routes suppressed by Damping feature continue to hold reference on the route's Nexthop, even though the route is uninstalled from FIB. On an EVO system, this prohibits the deletion of the IFL,IFD objects from completing, when the interface is deactivated in configuration. And EVO does not allow an object to be un-deleted or a new-incarnation to be created until old one is really gone. So even if the interface is re-activated in config, ping does not pass. [PR1423122](#)
- On platforms running Junos OS Evolved, issuing show igmp statistics would terminate the CLI shell [PR1426181](#)

### Software Installation and Upgrade

- Route add using BGP APIs can be relatively slow if route monitor register happens when bgp routes are already present in the router. Conditions: BGP route add performance is impacted when BGP route monitor is configured [PR1389212](#)
- If the disk is partitioned with non 'dos' partition type, kindly follow below steps, to erase/format and partition with 'msdos' partition type: ----- parted /dev/sdb mklabel msdos Reboot the box Request system snapshot ----- [PR1402409](#)

## User Interface and Configuration

- Junos OS Evolved uses the **request system shutdown (reboot | power-off | halt)** commands. This is different than the Junos commands for same functionality.
- If the device's configuration is modified when a Software Upgrade operation is in progress, the upgrade may fail. [PR1413386](#)
- IP is not getting assigned to the interface after delete and add interface [PR1424442](#)
- show system core-dumps | display xml output format is different from classic junos
- show system directory-usage | display xml has variance in the display from classic junos to evo

## Resolved Issues

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Open PRs resolved in Junos OS Evolved Release 19.1R2 for PTX10003 devices.

### General Routing

- show route summary in AFT won't show the table names properly. [PR1407174](#)
- Below transient alarm set/clear messages may be seen during the system bootup time. No functional impact. Alarm set message: Alarm set: RE color=red, class=CHASSIS, reason=Host 0 Ethernet Interface Link Down Alarm set: PWRZONE color=red, class=CHASSIS, reason=Zone 0 No Redundant Power Alarm set: PWRZONE color=yellow, class=CHASSIS, reason=Zone 0 N+2 Power redundancy missing Alarm cleared messages: Alarm cleared: RE color=red, class=CHASSIS, reason=Host 0 Ethernet Interface Link Down Alarm cleared: PWRZONE color=red, class=CHASSIS, reason=Zone 0 No Redundant Power Alarm cleared: PWRZONE color=yellow, class=CHASSIS, reason=Zone 0 N+2 Power redundancy missing [PR1418111](#)

- When interface-specific filters are configured with telemetry, template filter information is exported along with individual interface specific filters for each interface filter-bind [PR1419359](#)
- SRTE LSP with more than 3 label is not supported [PR1419368](#)
- When Highly Accelerated Life Test is carried out on PTX10003 Error messages "Nextthop: Failed to traverse af, proto will be null for nh\_id XXXX " will be seen for evo-aftmand application on the console [PR1424296](#)
- If traffic is more than 85% and terms applied on PFE traffic is more than 1516 then PFE is not able to carry traffic and it drops to 0%. [PR1424344](#)
- An IPv6 address configured on the management ethernet can get deactivated as the result of an interface flap [PR1425160](#)
- On continuous triggers of Deactivate /Activate Member Links of an AE bundle with SFLOW configured, evo-aftmand core may be observed, leading to a router reboot. [PR1425914](#)
- If the SSH session under which 'monitor interface traffic' is being run is killed, the iftop utility will stay at 100% CPU utilization. [PR1426069](#)
- evo-aftmand core at jprds\_encap\_desc\_add and router went for a reboot after continous triggers of MTU change and rollback [PR1426270](#)
- On SIB Offline, Minor Alarm "SIB <> Not Online" will be generated. In this state, restarting hwdre application and then Onlining the SIB, will not clear the Minor Alarm "SIB <> Not Online" [PR1426406](#)
- sflowd core seen when few interface related operations are performed. [PR1426902](#)
- ZTP file transfer will fail when using an FTP server that requires binary transfer mode to be explicitly defined, such as ProFTP. [PR1432727](#)

## Infrastructure

- FPC on PTX10003 might go to fault state, if system is rebooted during broadcast storm on mgmt port. [PR1423216](#)

## Network Management and Monitoring

- When snmpd is polled continuously, snmpd/mib2d may restart due to memory leak. [PR1424034](#)
- Querying for entPhysicalEntryTable may result in an snmp-subagent crash. [PR1425253](#)

## Routing Policy and Firewall Filters

- ASAN reported a global buffer overflow while running firewall unit tests. This issue is fixed and verified. [PR1430158](#)

## User Interface and Configuration

- Configd core is observed when scaling prefix list for S/A and DA address. [PR1421793](#)

# Junos OS Evolved Release Notes for QFX5220 Switches

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## What's New

### IN THIS SECTION

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- [What New in Junos OS Evolved Release 19.1R1 | 27](#)

Learn about the new features and enhancements to existing features in the Junos OS Evolved main release and the maintenance releases for QFX5220-32CD switches.



## What New in Junos OS Evolved Release 19.1R2

### *Class of Service (CoS)*

- **Layer 3 CoS support extended (QFX5220-32CD)**—Layer 3 CoS support has been extended to the QFX5220-32CD switch. Both IPv4 and IPv6 unicast routing are supported. Other CoS features supported include forwarding class (FC) to queue mapping, BA classifier - DSCP, fixed classifier and MF classifier, rewrite - DSCP, scheduling, WRED, ECN, and shared buffer. To provide higher port speed support, the following CLIs specific to rate configuration are updated to reflect a maximum possible rate of 400 Gbps:

- **set class-of-service schedulers sch1 transmit-rate**
- **set class-of-service schedulers sch1 shaping-rate**

[See [Understanding Class of Service](#)].

### *Hardware*

- **QFX5220-32CD Switch**—The QFX5220-32CD offers 32 ports of 400 Gigabit Ethernet in a low-profile 1-U form factor. With a 12.8-Tbps bandwidth, the QFX5220-32CD is optimally designed for spine-and-leaf deployments in enterprise, service provider, and cloud data centers. The high-speed ports support a wide variety of port configurations that include speeds of 400 Gbps, 100 Gbps, 50 Gbps, 40 Gbps, and 25 Gbps, and 10 Gbps.

An Intel Xeon D-1500 processor drives the QFX5220 control plane, which runs the Junos Evolved software. The Junos OS Evolved software image is stored on two internal 50-GB solid-state drives (SSDs). The QFX5220-32CD is available with either ports-to-FRUs or FRUs-to-ports airflow and with AC power supplies.

[See [QFX5220 System Overview](#).]

### *Interfaces and Chassis*

- **Mirroring support (QFX5220-32CD)**—Mirroring is supported on Layer 3 interfaces. There is no Layer 2 support (analyzer or port-mirroring).

### *JET APIs*

- **New IDL files that adhere to standardized guidelines (QFX5220-32CD)**—API files are to be made consistent with each other. Support of this feature is restricted to FE, GE, XE, and AE interfaces. Only the following functionality is included: Add, Delete, Modify, and GET for supported interface objects. There is also a Unit Permissions Get API, which is used to get the following information on an already created logical interface: was the logical interface was configured using APIs or CLI and, if it was configured using APIs, which client created the logical interface.

### *Junos Telemetry for Interfaces*

- **Junos Telemetry Interface (JTI) support (QFX5220-32CD)**—OpenConfig support through gRPC and JTI is available for the following telemetry sensors that were previously only supported on Junos OS:

- Sensor for Routing Engine internal interfaces (physical interface state and statistics)
- Sensor for Routing Engine internal Logical interfaces (logical interface state and statistics)
- Sensors for ARP
- Sensor for Network Discovery Protocol (NDP)
- Sensor for operational state of AE with LACP
- Sensor for operational state of LLDP (neighbors information)

To provision the sensor to export data through gRPC streaming, use the telemetry Subscribe RPC to specify telemetry parameters. Streaming telemetry data through gRPC also requires the OpenConfig and Network Agent packages.

[See [Configuring a Junos Telemetry Interface Sensor \(CLI Procedure\)](#).]

### ***Routing Protocols***

- **Profile image (Layer 3 profile) delivered (QFX5220-32CD)**—The protocols under the Routing Protocol process (rpd) are built as separate modules. By selecting which modules are included, rpd can be tailored to provide a given set of functionality, in effect, a leaner rpd. The Layer 3 fabric rpd is the first such lean rpd, known as a profile image. Any libraries not required for this functionality have been removed, reducing the executable size. CLI configuration related to the removed rpd protocol libraries has been removed. ISIS, OSPF, BGP, Static, BFDv4, and BFDv6 are supported. MPLS (LDP and RSVP), SR and SRTE, PIM, MLDP, EVPN, L2VPN, L2circuit, and dynamic tunnels are not supported.

**NOTE:** We don't recommend downloading or using this image. We will deprecate this image in Junos OS Evolved 21.4R1.

- **MPLS features supported (QFX5220-32CD):**

- SPRING MPLS
- Static and Dynamic LSPs
- LDP and RSVP
- L3 VPN for IPv4 and IPv6
- RSVP traffic engineering
- Penultimate-hop popping
- MPLS with ECMP
- MPLS over LAG

[See [MPLS Overview](#).]

- **GRE features supported (QFX5220-32CD):**

- GRE tunnels over GigE, LAG, and VLAN
- Payload protocol for IPv4 and IPv6
- Delivery protocol for IPv4
- Tunnel statistics
- VRF with GRE
- Time-to-live
- IPv4 as GRE delivery header
- IPv4 and IPv6 over GRE
- ISO over GRE
- Copying TOS to outer-IP for Routing Engine traffic

[See [Generic Routing Encapsulation \(GRE\)](#).]

- **LACP features supported (QFX5220-32CD):**

- LACP load balancing
- OpenConfig
- Telemetry
- Sync-reset with minimum-link
- LACP force-up
- LACP hold up

[See [Understanding Aggregated Ethernet Interfaces and LACP](#).]

- **Support for BFD (QFX5220-32CD)**—QFX5220-32CD switches support bidirectional forwarding detection (BFD). BFD is a simple mechanism that detects failures in a network and works in a wide variety of network environments and topologies.

[See [Understanding Bidirectional Forwarding Detection \(BFD\)](#).]

- **Support for Layer 3 forwarding (QFX5220-32CD)**—QFX5220-32CD switches support IPv4 and IPv6 unicast routing as well as 128-way ECMP and Layer 3 load balancing. Reverse path forwarding is not supported.

[See [Understanding Layer 3 Logical Interfaces](#).]

### *Routing Policy and Firewall Filters*

- **Firewall filter support on Layer 3 interfaces (QFX5220-32CD)**—You can now configure a firewall filter on the switch and apply it to a Layer 3 (routed) interface. To configure the filter, you specify the family address type (inet or inet6 ), match condition, and the action to take if a match occurs. You configure firewall filters at the **[edit firewall]** hierarchy level. This feature was previously supported in an "X" release of Junos OS.

[See [Firewall Filter Match Conditions and Actions \(QFX5220\)](#).]

### *Software Installation and Upgrade*

- **Software upgrade support (QFX5220-32CD)**—A single CLI command, **request system software add**, is used to upgrade the device. The **restart** option, allows you to upgrade the system using an application-level restart, that is, no system reboot. First the system determines how many applications need to restart (start with a new version), and then, after sending output to the CLI session, it restarts those applications. The applications upgraded receive their state from the system.

### *User Interface*

- **Zero Touch Provisioning (ZTP) supported (QFX5220-32CD)**—ZTP can dramatically reduce the time to provision the network in a data center and decrease the opportunity for introduction of human error into the network. The image and configuration files are placed centrally in a network server. The device is shipped with factory default configuration along with ZTP configuration. Upon booting up, the device downloads the image from the central location, upgrades itself and, upon rebooting, applies the configuration that it fetched from the network server. In this release, only the management interface (vmb0) can run ZTP.

[See [Zero Touch Provisioning](#).]

## **What New in Junos OS Evolved Release 19.1R1**

There are no new or changed features introduced in Junos OS Evolved Release 19.1R1 for QFX5220 switches.

## **What's Changed**

There are no differences in behavior and syntax in Junos OS Evolved for QFX5220 devices in this release.

## Known Behavior

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- [Multiprotocol Label Switching \(MPLS\) | 28](#)
- [User Interface and Configuration | 28](#)

Learn about known behavior in Junos OS Evolved for QFX5220 devices.

### Authentication and Access Control

- Here template user authorization parameters are being tested, this functionality is not currently supported. Support for template user authorization is planned as part of RLI-38945 [PR1415949](#)

### Infrastructure

- On the QFX5220-32CD switch, the serial port LED is not supported. [PR1417226](#)

### Multiprotocol Label Switching (MPLS)

- In an MPLS network where the QFX5220 acts as MPLS PE or P router, traffic loss can be seen during FRR triggers like node/link failure. The duration of the loss depends on the number of routes and next-hops in the switch and varies between 300 milliseconds to 1 second. [PR1416946](#)
- During frequent route updates or link flaps, the system may not achieve the full scale of 4K ECMP next-hops. [PR1419943](#)

### User Interface and Configuration

- Junos OS Evolved uses the **request system shutdown (reboot | power-off | halt)** commands. This is different than the Junos commands for same functionality.
- For large yang file, augmentation may not work [PR1416972](#)

- In Junos OS Evolved for 19.1R2, vlans between 3968 to 4095 reserved for L3 interfaces by default. So this vlans can not be used for L2 interfaces. As of now there is no commit check added for this purpose. User should take care of this while configuring vlan for L2. [PR1423468](#)

## Open Issues

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- [Network Management and Monitoring | 29](#)
- [Routing Protocols | 29](#)
- [Software Installation and Upgrade | 30](#)
- [User Interface and Configuration | 30](#)

Learn about open issues in Junos OS Evolved for QFX5220 devices.

### Interfaces and Chassis

- "Queues in use:" CLI output always shows value as 8 when the CLI command "show interfaces queue" is executed. [PR1421176](#)

### Network Management and Monitoring

- ICMP mib table is not implemented in Junos OS Evolved and as such SNMP walk/get on this table will not yield any values. [PR1378659](#)

### Routing Protocols

- Some features are documented but not supported in lean rpd profile image for Junos OS Evolved Release 19.1R2. Following are some examples of the unsupported CLI:

- Use of advanced routing-related keywords in the policy options stanza, such as route distinguisher, rtf-prefix-list, family (evpn | esis | l2vpn | l2circuit | | msdp | pim | rsvp | spring-te | vpls), dynamic-tunnels, label-allocation, no-entropy-label-capability, p2mp-lsp-root, prefix-segment, ssm-source, selected-mldp-egress
- Use of the family (ccc | mpls | vpls) for an interface configuration
- The output for the **show bfd** client sessions command for rsvp and vpls
- Help apropos for various keywords

[PR1387985](#), [PR1387955](#), [PR1387991](#), [PR1388008](#), [PR1388058](#), and [PR1388102](#)

- the command "show pfe route summary" is not supported [PR1405448](#)
- Hidden BGP routes suppressed by Damping feature continue to hold reference on the route's Nexthop, even though the route is uninstalled from FIB. On an EVO system, this prohibits the deletion of the IFL,IFD objects from completing, when the interface is deactivated in configuration. And EVO does not allow an object to be un-deleted or a new-incarnation to be created until old one is really gone. So even if the interface is re-activated in config, ping does not pass. [PR1423122](#)

## Software Installation and Upgrade

- picd and clksynced apps are not supported for ISSU upgrade on QFX5220-32CD. In order to upgrade these apps, the system needs to be rebooted. [PR1423150](#)

## User Interface and Configuration

- Multiple configd object anomalies seen after restart configd followed by triggers like deactivate interfaces/chassis and activate interfaces chassis [PR1415643](#)
- IP is not getting assigned to the interface after delete and add interface [PR1424442](#)

## Resolved Issues

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●	Routing Policy and Firewall Filters   31
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## Hardware

- 100G PSM4 optics are not supported in this release. [PR1406553](#)
- As per MSA standards, link training needs to be enabled and that is reason behind link between Spirent and QFX5220-32CD is not UP. [PR1417749](#)
- When physical links were removed and plugged back in immediately under a sec, there is intermittent chance that link might not be UP. [PR1426541](#)

## Interfaces and Chassis

- When the PICD app is restarted, the interface queue stats do not reflect the forwarding counters immediately in the "show interface extensive" output. They will start displaying the counters accurately when the forwarded packet count exceeds the value which was cached before the PICD restart. [PR1424251](#)
- sflowd core seen when few interface related operations are performed. [PR1426902](#)

## MPLS

- pcep configuration and operational commands are visible in Junos OS Evolved Release 19.1R1 lean rpd profile image but are not supported. [PR1387980](#)

## Network Management and Monitoring

- If the SSH session under which 'monitor interface traffic' is being run is killed, the iftop utility will stay at 100% CPU utilization. [PR1426069](#)

## Routing Policy and Firewall Filters

- This is new CLI:
  - set firewall family ethernet-switching filter <filter-name> term <term-name> from source-port-match-optimize <port>



- set firewall family ethernet-switching filter <filter-name> term <term-name> from destination-port-match-optimize <port>

[PR1395131](#)

## Software Installation and Upgrade

- When software upgrade is performed wherein a set of components get upgraded, the customer may potentially notice that the versions of some other components change across the upgrade even though they were not really upgraded. There is no functional impact here and the components that did not get upgraded for which the versions show up as changed, wont be impacted during the upgrade process. [PR1422573](#)
- When 'request system software rollback reboot' is executed, the expected behavior is to print a message that says 'Rollback Done' and let the user know that device would be going for a reboot. This message is not getting printed under some scenarios. [PR1423921](#)
- ZTP file transfer will fail when using an FTP server that requires binary transfer mode to be explicitly defined, such as ProFTP. [PR1432727](#)

# Appendix A: Standard MIBs for Junos OS Evolved on PTX10003 and QFX5220 Devices

**Support for Standard MIBs for Junos OS Evolved**—Starting in Junos OS Evolved Release 19.1R2, the Standard MIBs listed in [Table 1 on page 33](#) are supported. For information about Standard MIB objects, see the [SNMP MIB Explorer](#).

**Table 1: Standard MIBs Supported by Junos OS Evolved**

Standard MIB	Exceptions
RFC 1155, <i>Structure and Identification of Management Information for TCP/IP-Based Internets</i>	No exceptions
RFC 1157, <i>A Simple Network Management Protocol (SNMP)</i>	No exceptions
RFC 1212, <i>Concise MIB Definitions</i>	No exceptions
RFC 1213, <i>Management Information Base for Network Management of TCP/IP-Based Internets: MIB-II</i>	Unsupported tables and objects: <ul style="list-style-type: none"> <li>• ICMP group</li> </ul>
RFC 1215, <i>A Convention for Defining Traps for Use with the SNMP</i>	No exceptions
RFC 1850, <i>OSPF Version 2 Management Information Base</i>	No exceptions
RFC 1901, <i>Introduction to Community-Based SNMPv2</i>	No exceptions
RFC 2011, <i>SNMPv2 Management Information Base for the Internet Protocol Using SMIv2</i>	No exceptions
RFC 2096, <i>IP Forwarding Table MIB</i>	No exceptions

Table 1: Standard MIBs Supported by Junos OS Evolved (*continued*)

Standard MIB	Exceptions
RFC 2465, <i>Management Information Base for IP Version 6: Textual Conventions and General Group</i>	Supported tables and objects: <ul style="list-style-type: none"> <li>• ipv6AddrTable</li> <li>• ipv6NetToMediaTable</li> <li>• ipv6IfTable</li> <li>• ipv6IfStatsTable</li> <li>• ipv6AddrPrefixTable</li> <li>• ipv6IfTableLastChange</li> <li>• ipv6Interfaces</li> <li>• ipv6Forwarding</li> <li>• ipv6DefaultHopLimit</li> </ul>
RFC 2576, <i>Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework</i>	No exceptions
RFC 2578, <i>Structure of Management Information Version 2 (SMIv2)</i>	No exceptions
RFC 2579, <i>Textual Conventions for SMIv2</i>	No exceptions
RFC 2580, <i>Conformance Statements for SMIv2</i>	No exceptions
RFC 2665, <i>Definitions of Managed Objects for the Ethernet-like Interface Types</i>	Unsupported tables and objects: <ul style="list-style-type: none"> <li>• dot3</li> </ul>
RFC 2790, <i>Host Resources MIB</i>	Unsupported tables and objects: <ul style="list-style-type: none"> <li>• hrDeviceTable</li> <li>• hrSWRunTable</li> <li>• hrSWRunPerfTable</li> </ul>
RFC 2863, <i>The Interfaces Group MIB</i>	No exceptions
RFC 2864, <i>The Inverted Stack Table Extension to the Interfaces Group MIB</i>	No exceptions
RFC 2925, <i>Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations</i>	No exceptions
RFC 2932, <i>IPv4 Multicast Routing MIB</i>	No exceptions

Table 1: Standard MIBs Supported by Junos OS Evolved (*continued*)

Standard MIB	Exceptions
RFC 2934, <i>Protocol Independent Multicast MIB for IPv4</i>	No exceptions
RFC 2981, <i>Event MIB</i>	No exceptions
RFC 3014, <i>Notification Log MIB</i>	No exceptions
RFC 3019, <i>IP Version 6 Management Information Base for the Multicast Listener Discovery Protocol</i>	No exceptions
RFC 3410, <i>Introduction and Applicability Statements for Internet-Standard Management Framework</i>	No exceptions
RFC 3411, <i>An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks</i>	No exceptions
RFC 3412, <i>Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)</i>	No exceptions
RFC 3413, <i>Simple Network Management Protocol (SNMP) Applications</i>	No exceptions
RFC 3414, <i>User-Based Security Model (USM) for Version 3 of the Simple Network Management Protocol (SNMPv3)</i>	No exceptions
RFC 3415, <i>View-Based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)</i>	No exceptions
RFC 3416, <i>Version 2 of the Protocol Operations for the Simple Network Management Protocol (SNMP)</i>	No exceptions
RFC 3417, <i>Transport Mappings for the Simple Network Management Protocol (SNMP)</i>	No exceptions
RFC 3418, <i>Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)</i>	No exceptions
RFC 3584, <i>Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework</i>	No exceptions

Table 1: Standard MIBs Supported by Junos OS Evolved (*continued*)

Standard MIB	Exceptions
RFC 3637, <i>Definitions of Managed Objects for the Ethernet WAN Interface Sublayer</i>	No exceptions
RFC 3811, <i>Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management</i>	No exceptions
RFC 3812, <i>Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)</i> (read-only access)	No exceptions
RFC 3813, <i>Multiprotocol Label Switching (MPLS) Label Switching Router (LSR) Management Information Base (MIB)</i>	Unsupported tables and objects (read only access): <ul style="list-style-type: none"> <li>• mplsInterfacePerfTable</li> <li>• mplsInSegmentPerfTable</li> <li>• mplsOutSegmentPerfTable</li> <li>• mplsInSegmentMapTable</li> <li>• mplsXCUp</li> <li>• mplsXCDown</li> </ul>
RFC 3826, <i>The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-Based Security Model</i>	No exceptions
RFC 3877, <i>Alarm Management Information Base</i>	No exceptions
RFC 4133, <i>Entity MIB</i>	Supported table: <ul style="list-style-type: none"> <li>• entPhysicalTable</li> </ul>
RFC 4292, <i>IP Forwarding MIB</i>	No exceptions

Table 1: Standard MIBs Supported by Junos OS Evolved (*continued*)

Standard MIB	Exceptions
RFC 4293, Management Information Base for the Internet Protocol (IP)	<p>Supported tables:</p> <ul style="list-style-type: none"> <li>• ipAddressTable</li> <li>• ipAddrTable</li> <li>• ipNetToPhysicalTable</li> <li>• ipNetToMediaTable</li> <li>• ipSystemStatsTable</li> </ul> <p>Unsupported objects:</p> <ul style="list-style-type: none"> <li>• icmpMsgStatsIPVersion</li> <li>• icmpMsgStatsType</li> <li>• icmpMsgStatsInPkts</li> <li>• icmpMsgStatsOutPkts</li> <li>• icmpStatsIPVersion</li> <li>• icmpStatsInMsgs</li> <li>• icmpStatsInErrors</li> <li>• icmpStatsOutMsgs</li> <li>• icmpStatsOutErrors</li> </ul>
RFC 4444, <i>IS-IS MIB</i>	No exceptions
RFC 5643, <i>Management Information Base for OSPFv3</i> (read-only access)	No exceptions
Internet Assigned Numbers Authority, <i>IANAiftype Textual Convention MIB</i>	No exceptions
Internet draft draft-ietf-idmr-igmp-mib-13.txt, <i>Internet Group Management Protocol (IGMP) MIB</i>	No exceptions
Internet draft draft-reeder-snmpv3-usm-3desede-00.txt, <i>Extension to the User-Based Security Model (USM) to Support Triple-DES EDE in 'Outside' CBC Mode</i>	No exceptions
Internet draft draft-ietf-isis-wg-mib-07.txt, <i>Management Information Base for IS-IS</i>	No exceptions
Internet draft draft-ietf-ospf-ospfv3-mib-11.txt, <i>Management Information Base for OSPFv3</i>	No exceptions

Table 1: Standard MIBs Supported by Junos OS Evolved (*continued*)

Standard MIB	Exceptions
Internet draft draft-ietf-idmr-pim-mib-09.txt, <i>Protocol Independent Multicast (PIM) MIB</i>	No exceptions
Internet Draft P2MP MPLS-TE MIB (draft-ietf-mpls-p2mp-te-mib-09.txt) (read-only access)	No exceptions

# Appendix B: Enterprise-Specific MIBs for Junos OS Evolved on PTX10003 and QFX5220 Devices

**Support for enterprise-specific MIBs for Junos OS Evolved**—Starting in Junos OS Evolved Release 19.1R2, the enterprise-specific MIBs listed in [Table 2 on page 39](#) are supported. For information about enterprise-specific SNMP MIB objects, see the [SNMP MIB Explorer](#).

Table 2: Enterprise-Specific MIBs Supported by Junos OS Evolved

Enterprise-Specific MIB	Description	Exceptions
BGP4 V2 MIB	Provides support for monitoring BGP peer-received prefix counters. It is based upon similar objects in the MIB documented in Internet draft draft-ietf-idr-bgp4-mibv2-03.txt, <i>Definitions of Managed Objects for the Fourth Version of BGP (BGP-4), Second Version</i> .	No exceptions



Table 2: Enterprise-Specific MIBs Supported by Junos OS Evolved (*continued*)

Enterprise-Specific MIB	Description	Exceptions
Chassis MIBs	Provides support for environmental monitoring (power supply state, board voltages, fans, temperatures, and air flow) and inventory support for the chassis, System Control Board (SCB), System and Switch Board (SSB), Switching and Forwarding Module (SFM), Switch Fabric Board (SFB), Flexible PIC Concentrators (FPCs), and PICs.	<p>Supported traps:</p> <ul style="list-style-type: none"> <li>• jnxFruInsertion</li> <li>• jnxFruRemoval</li> <li>• jnxFruPowerOn</li> <li>• jnxFruPowerOff</li> <li>• jnxFruOnline</li> <li>• jnxFruOffline</li> <li>• jnxFruFailed</li> <li>• jnxFruOK</li> <li>• jnxPowerSupplyFailure</li> <li>• jnxPowerSupplyOK</li> <li>• jnxPowerSupplyInputFailure</li> <li>• jnxPowerSupplyInputOK</li> <li>• jnxFanFailure</li> <li>• jnxFanOK</li> <li>• jnxOverTemperature</li> <li>• jnxTemperatureOK</li> </ul> <p>Supported tables and objects:</p> <ul style="list-style-type: none"> <li>• jnxBoxClass</li> <li>• jnxBoxDescr</li> <li>• jnxBoxSerialNo</li> <li>• jnxBoxRevision</li> <li>• jnxBoxInstalled</li> <li>• jnxContentsLastChange</li> <li>• jnxContainersTable</li> <li>• jnxOperatingTable</li> <li>• jnxRedundancyTable</li> <li>• jnxContentsTable</li> <li>• jnxFilledTable</li> <li>• jnxFruTable</li> </ul>
Class-of-Service MIB	Provides support for monitoring interface output queue statistics per interface and per forwarding class.	No exceptions

Table 2: Enterprise-Specific MIBs Supported by Junos OS Evolved (*continued*)

Enterprise-Specific MIB	Description	Exceptions
Host Resources MIB	Extends the hrStorageTable object, providing a measure of the usage of each file system on the router in percentage format. Previously, the objects in the hrStorageTable measured the usage in allocation units—hrStorageUsed and hrStorageAllocationUnits—only. Using the percentage measurement, you can more easily monitor and apply thresholds on usage.	Supported tables and objects: <ul style="list-style-type: none"> <li>• hrStorageTable</li> <li>• jnxHrStorage</li> <li>• hrSWInstalledTable</li> <li>• hrSystemUptime</li> <li>• hrSystemDate</li> <li>• hrSystemInitialLoadDevice</li> <li>• hrSystemInitialLoadParameters</li> <li>• hrSystemNumUsers</li> <li>• hrSystemProcesses</li> <li>• hrSystemMaxProcesses</li> <li>• hrMemorySize</li> <li>• hrSWInstalledLastChange</li> <li>• hrSWInstalledLastUpdateTime</li> </ul>
Interface MIB	Extends the standard ifTable (RFC 2863) with additional statistics and Juniper Networks enterprise-specific chassis information.	No exceptions
IPv4 MIB	Provides additional IPv4 address information, supporting the assignment of identical IPv4 addresses to separate interfaces.	No exceptions
IPv6 and ICMPv6 MIB	Provides IPv6 and Internet Control Message Protocol version 6 (ICMPv6) statistics.	Unsupported objects <ul style="list-style-type: none"> <li>• jnxIcmpv6GlobalStats branch and the objects under it</li> </ul>
LDP MIB	Provides LDP statistics and defines LDP label-switched path (LSP) notifications. LDP traps support only IPv4 standards.	No exceptions
MPLS LDP MIB	Contains object definitions as described in RFC 3815, <i>Definitions of Managed Objects for the Multiprotocol Label Switching (MPLS), Label Distribution Protocol (LDP)</i> .	No exceptions

Table 2: Enterprise-Specific MIBs Supported by Junos OS Evolved (*continued*)

Enterprise-Specific MIB	Description	Exceptions
MPLS MIB	Provides MPLS information and defines MPLS notifications.	No exceptions
RSVP MIB	Provides information about RSVP-traffic engineering sessions that correspond to MPLS LSPs on transit routers in the service provider core network.	No exceptions
SFF Digital Optical Monitor MIB	Defines objects used for Digital Optical Monitor on interfaces of Juniper products.	Supported tables: <ul style="list-style-type: none"> <li>• jnxDomCurrentTable</li> <li>• jnxDomModuleLaneTable</li> </ul>
VPN MIB	Provides monitoring for Layer 3 VPNs, Layer 2 VPNs, and virtual private LAN service (VPLS).	Unsupported objects <ul style="list-style-type: none"> <li>• jnxVpnActiveVpns</li> <li>• jnxVpnConfiguredVpns</li> </ul>

## Finding More Information

Learn about more information on Junos OS Evolved and other Juniper products.

- Feature Explorer—The Juniper Networks Feature Explorer is a Web-based app that helps you to explore and compare Junos OS and Junos OS Evolved feature information to find the right software release and hardware platform for your network. <https://pathfinder.juniper.net/feature-explorer/>
- PR Search Tool—Keep track of the latest and additional information about Junos OS Evolved open defects and issues resolved. [prsearch.juniper.net](https://prsearch.juniper.net)
- Hardware Compatibility Tool—Determine optical interfaces and transceivers supported across all platforms. [apps.juniper.net/hct/home](https://apps.juniper.net/hct/home)

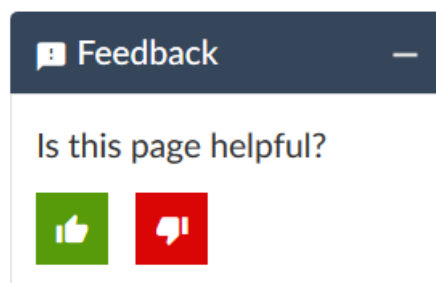
**NOTE:** To obtain information about the components that are supported on the devices, and the special compatibility guidelines with the release, see the Hardware Guide for the product.

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- Find product documentation: <https://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes: <https://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <https://www.juniper.net/company/communities/>
- Create a service request online: <https://myjuniper.juniper.net>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://entitlementsearch.juniper.net/entitlementsearch/>

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- Visit <https://myjuniper.juniper.net>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <https://support.juniper.net/support/requesting-support/>.

## Revision History

13 August 2021—Revision 5, Junos OS Evolved Release 19.1R2 for the PTX10003 Router and QFX5220 Switch.

30 April 2020—Revision 4, Junos OS Evolved Release 19.1R2 for the PTX10003 Router and QFX5220 Switch.

21 November 2019—Revision 3, Junos OS Evolved Release 19.1R2 for the PTX10003 Router and QFX5220 Switch, Added a Known limitation for both ptx and qfx.

14 October 2019—Revision 2, Junos OS Evolved Release 19.1R2 for the PTX10003 Router and QFX5220 Switch, Added see reference for release note under Routing Policies and Firewall Filters.

25 June 2019—Revision 1, Junos OS Evolved Release 19.1R2 for the PTX10003 Router and QFX5220 Switch.

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