

Release Notes

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Junos[®] OS Evolved Release 21.4R1

SUPPORTED PLATFORMS

- ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220, and QFX5700

SOFTWARE HIGHLIGHTS

- Layer 2 VPN for FAT Label (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)
- Export BGP Community and AS Path Information using IPFIX (PTX Series)
- MPLS Support for FTI tunnels (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)
- GPS and BITS interface support (PTX10008)
- Layer 2 and layer 3 support for flood policers (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)

Day One+

- Use this [new setup guide](#) to get your Junos OS Evolved up and running in three quick steps.

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Introduction

Use these release notes to find new and updated features, software limitations, and open issues for Junos OS Evolved Release 21.4R1.

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 ACX7100-32C and ACX7100-48L Devices

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These release notes accompany Junos OS Evolved Release 21.4R1 for ACX7100-32C and ACX7100-48L routers. 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 in this release for ACX Series Routers.

What's New in 21.4R1

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- [Network Management and Monitoring | 2](#)
- [Services Applications | 2](#)
- [Additional Features | 3](#)

To view features supported on the ACX platforms, view the Feature Explorer using the following links. To see which features were added in Junos OS Evolved Release 21.4R1, click the Group by Release link. You can collapse and expand the list as needed.

- [ACX7100-32C](#)
- [ACX7100-48L](#)

The following sections highlight the key features in this release.

Network Management and Monitoring

- **SNMP MIB support for ICMP (ACX7100-32C, ACX7100-48L,, PTX10001-36MR, PTX1003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220, and QFX5700)**—Starting in Junos OS Evolved Release 21.4R1, we've added support for the following RFC4293 tables:
 - icmpStatsTable—Generic system-wide ICMP counters
 - icmpMsgStatsTable—System-wide per-version and per-message type ICMP counters

[See [Standard MIBs for Junos OS Evolved](#).]

Services Applications

- **TWAMP IPv6 address support (ACX7100)**—Starting in Junos OS Evolved Release 21.4R1, you can specify IPv6 source and target addresses for Two-Way Active Measurement Protocol (TWAMP) clients, control connections, and test sessions.

[See [Understand Two-Way Active Measurement Protocol](#).]

Additional Features

We've extended support for the following features to these platforms.

- **Hotfix support (ACX7100-32C and ACX7100-48L)**—Support for hot fix using a delivery mechanism of full .iso images.

[See [request system software add](#) and [show system software list](#) .]

- **IPsec support for OSPFv2 and OSPFv3 (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10008, PTX10016, QFX5130-48C, and QFX5220)**

[See [Overview of IPsec](#), [Configuring OSPF Authentication](#), and [Configuring IPsec Security Associations](#).]

- **Layer 3 Gateway Encapsulation support for Layer 3 over an IPv4 underlay (ACX7100-48L)**—Junos OS Evolved Release 21.4R1 provides an L3 gateway that can route packets across subnets. At the ingress VXLAN tunnel endpoint (VTEP), L3 traffic entering from a routing interface is routed to the VXLAN tunnel. At the egress VTEP, the VXLAN tunnel is terminated and the forwarding decision is determined based on the inner header. L3 VXLAN gateways are configurable as both centralized and distributed gateways.

[See [Layer 3 Feature Guide for Routing Devices](#).]

- **Metro Ethernet services (ACX7100-32C and ACX7100-48L)**

- IRB interface support for IPv4 and IPv6
- IPv6 multicast protocol support (FHR, LHR, and RP roles) for any-source multicast (ASM) and source-specific multicast (SSM) modes

NOTE:

[See [Multicast Overview](#) and [Understanding Integrated Routing and Bridging](#).]

- **Storm control support in an Ethernet VPN–Virtual Extensible LAN (EVPN-VXLAN) overlay network (ACX7100-48L)**

[See [Understanding Storm Control](#).]

- **Support for EVPN-VXLAN Active/Active multihoming with Ethernet Switch Identifier for Link Aggregation Groups (ESI-LAG) (ACX7100-48L)**—Junos OS Evolved Release 21.4R1 introduces EVPN control plane support for BGP and VXLAN with VNI (VXLAN Network Identifier) segment ID encoding for L2 and L3 gateway unicast functionality. This feature supports Active/Active multihoming for servers and nodes connecting to multiple leaf nodes. You can configure multihomed Ethernet segments configured on the physical interface (IFD).

[See [EVPN VXLAN User Guide - Leaf Device Forwarding](#).]

- **Supported transceivers, optical interfaces, and DAC cables (ACX Series, PTX Series, and QFX Series)**
—Select your product in the [Hardware Compatibility Tool](#) to view supported transceivers, optical interfaces, and DAC cables for your platform or interface module. We update the HCT and provide the first supported release information when the optic becomes available.
- **VXLAN Layer 2 gateway with encapsulation support over an IPv4 underlay (ACX7100-48L)**—Junos OS Evolved Release 21.4R1 includes VXLAN L2 gateways that provide L2 connectivity between leaf devices separated by an underlay Layer 3 network.

NOTE:

```
set protocols evpn default-gateway no-gateway-community
```

[See [Layer 2 Feature Guide for Routing Devices](#).]

What's Changed

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Learn about what changed in this release for ACX Series Routers.

What's Changed in Release 21.4R1

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EVPN

- **Output for show Ethernet switching flood extensive**—The output for `show ethernet-switching flood extensive` now displays the correct next-hop type for Virtual Ethernet and WAN mesh group in an EVPN-VXLAN network as unilist. Previously, the output for `show ethernet-switching flood extensive` would misidentify the next-hop type as composite.

Interfaces and Chassis

- When configuring multiple flexible tunnel interface (FTI) tunnels, the source and destination address pair needs to be unique only among the FTI tunnels of the same tunnel encapsulation type. Prior to this PR, the source and destination address pair had to be unique among all the FTI tunnels regardless of the tunnel encapsulation type.

Network Management and Monitoring

- **SNMP support for MIB**—Operational command `show snmp mib walk system` now shows the latest software version and does not show the build date.

[See [show snmp mib](#).]

- **Change in behavior of SNMP MIB object ifAlias**—SNMP MIB object `ifAlias` now shows the configured interface alias. In earlier releases, `ifAlias` used to show configured interface description.
- **Support for disconnecting unresponsive NETCONF-over-SSH clients (ACX Series, PTX Series, and QFX Series)**—You can enable devices to automatically disconnect unresponsive NETCONF-over-SSH clients by configuring the `client-alive-interval` and `client-alive-count-max` statements at the `[edit system services netconf ssh]` hierarchy level. The `client-alive-interval` statement specifies the timeout interval in seconds, after which, if no data has been received from the client, the device requests a response. The `client-alive-count-max` statement specifies the threshold of missed client-alive responses that triggers the device to disconnect the client, thereby terminating the NETCONF session.

[See [ssh \(NETCONF\)](#).]

- **The configuration accepts only defined identity values for nodes of type identityref in YANG data models (ACX Series, PTX Series, and QFX Series)**—If you configure a statement that has type `identityref` in the corresponding YANG data model, the device accepts only defined identity values (as defined by an identity statement) as valid input. In earlier releases, the device also accepts values that are not defined identity values.

Routing Protocols

- To achieve consistency among resource paths, the resource path `//mpls/signalling-protocols/segment-routing/aggregate-sid-counters/aggregate-sid-counter ip-addr='address'/state/countersname='name'/out-pkts/` is changed to `/mpls/signaling-protocols/segment-routing/aggregate-sid-counters/aggregate-sid-counterip-addr='address'/state/counters name='name'/`. The leaf "out-pkts" is removed from the end of the path, and "signalling" is changed to "signaling" (with one "l").

Known Limitations

Learn about limitations in Junos OS Evolved 21.4R1 Release for ACX Series Routers.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

General Routing

- In some corner cases traffic is not scheduled equally between strict priority queues. This can happen in the following scenario: Priority queue configured and is completely utilizing the bandwidth and remaining queues are starved and traffic completely drops on those queues. In this state if we configure a second strict high priority queue traffic is not scheduled equally between strict priority queues. This is hardware specific issue, Q2C specific. [PR1577035](#)
- When PTP is enabled, ACX7100-32C port 31 is configured to 1G. A vendor's J2 only supports to 10G, so another vendor's gearbox converts 10G to 1G by rate matching. However, there is one limitation: it can only support frame size of 2000 bytes officially, so jumbo frame cannot be supported on port 31 when PTP mode is enabled. [PR1593015](#)
- The queue statistics are not appropriate in the following scenarios:
 1. When DRAM block is asserted in case of continuous congestion. DRAM block is a mechanism to stop traffic from going to DRAM when it is oversubscribed. This prevents packet stuck in the DRAM forever. (DRAM block feature is enabled by default in the ASIC). For this issue we have provided a CLI to disable the DRAM block. You might not see the issue after disabling it.
 2. Packet deleted in VoQ due to non-arrival of credit (Watchdog timer flushing the VoQ).

Per the vendor, packet deleted in VoQ due to non-arrival of credit (Watchdog timer flushing the VoQ) is not counted as dropped packet. This can happen in two scenarios:

- The bandwidth is completely configured on a few queues and the other queues do not get any credit.
- When priority queue is configured and only priority traffic gets scheduled and the other queues do not get any credit and no shaper on priority queue.

In scenario b) the statistics on the SHP also fluctuates. We recommend to configure shaper on priority queue to prevent starvation of other queues. [PR1601320](#)

- In case of scaled scenarios with route table scale reaching upto their full limit (close to 1M), a few triggers which reprogram the routing table might result in route entries getting missed in hardware. This happens in a worst-case scenarios of prefix distribution. In real-time scenario this issue must not be seen while the internet route scale is around 800,000 which must hold good. [PR1604034](#)
- This is the common issue of Junos OS Evolved platform for 400G DAC. On picd restart, the first pcsE has no Xcvr information, and the default Xcvr type is optics, so pfemand configures the port as 400G optics and turn off AN, later on. When the second pcsE arrives, it carries the correct Xcvr information, and turns on AN again. This might flap one link. In the early stage of picd restart, the underlying link is still up, this updates to picd inevitably. Then the first PcsE event comes, and link is down. After the second PcsE event comes, link is up. [PR1604454](#)
- Route installation (/32) routes in Packet Forwarding Engine takes longer time to install in LPM, when LEM table limit is reached in the hardware. This issue is observed, only when LEM scale is lesser and LPM scale is on the higher side. when LEM reports 'Table Full', it takes around 1ms to install 1 route in hardware. Since we have around 2.3M routes to be pushed under this condition, the LPM installation will take longer time. [PR1604954](#)
- PTP to PTP noise transfer fails for frequencies 1. 0.03125 HZ 2. 0.123125 HZ. [PR1608786](#)
- syncE to PTP and syncE to 1pps noise transfer tests fails for frequencies 1. 0.00781 HZ 2. 0.01563 HZ 3. 0.03125 HZ 4. 0.06156 HZ 5. 0.12313 HZ. [PR1608866](#)
- On ACX7100-48L, enabling or disabling of PTP TC or BC causes all the interfaces to flap at the same time. [PR1609927](#)
- If more than 400 PTP clients are connecting to a single interface configured for PTPoE, PTP delay statistics might not be collected correctly. [PR1611130](#)
- In a system with different type of interfaces (IRB, ccc, rest of interfaces), classifier might not work in specific scenarios. [PR1619441](#)
- CCM transmission keeps happening (for the UP MEP aggregated Ethernet case) during FPC restart. This is because, aggregated Ethernet interface might not be deleted during the FPC restart. Therefore, the session information that is already programmed in the hardware will not get deleted. As a result, during the FPC restart case, the CCM transmission keeps happening. Due to this reason,

sessions are up on the peer. Whereas in case of physical interface, the sessions will get deleted and added back during FPC restart. [PR1627369](#)

- Ingress replication is default for multicast. Packet Forwarding Engine can replicate upto 2.4T which is the chip capacity. Inter-Packet Forwarding Engine replication is limited to 2.1T due to fabric bandwidth limitations. Therefore, with ingress replication, it is not possible to achieve total egress traffic across ports more than 2.1T. [PR1629280](#)

Open Issues

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Learn about open issues in this release for ACX Series Routers.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

Fault Management

- On FPC log, when the system is up, the Packet Forwarding Engine error message Jexpr: JexprHandleDdos faile to update plct pfe:1f proto:0x8400 will be seen. This error message is just a debugging error message, there is no functional impact with this log error messages. [PR1610764](#)

General Routing

- 4x400G FPC is supported on FPC slot 1 and FPC slot 5 only as per design. 4x400G FPC plugged into any slot might bring FPC online but links come up only in FPC1 or FPC5. When 4x400G FPC is plugged into other slots, it does not allow the FPC to come online and an alarm is raised. [PR1582183](#)

- Error messages are observed while accessing the supercon scratch pad registers on bootup and there is no functional impact. [PR1594136](#)
- When you restart FPC with scale configuration or routes or MAC entries, picd might generate a core file. PICD backup automatically and user intervention is not required. [PR1595861](#) and [PR1602352](#)
- The timingd application cannot be successfully restarted for ACX7100-32C and ACX7100-48L in the first G.8275.1 software release. [PR1597120](#)
- Currently, support for load balancing is on ECMP and not on ECMP FRR. Behaviour is the same as in Xmen. [PR1599752](#)
- With IGMPv3 reports received at a higher rate more than 1600 pps, packets are dropped due to control plane rate limit. Therefore, it is not possible to form 2,56,000 IGMP groups. Need to tweak DDOS configuration for reaching 2,56,000 IGMP groups. [PR1599998](#)
- Given the higher number of internal ports, 2 Broadcom Q2C ASICs and a total of 8 FPCs supporting maximum of 20 ports, the statistics thread is expected to consume system resources. The current statistics collection which is done in the evo-pfemand application needs to be refactored, so that the statistics thread does not end up hogging the system. [PR1603899](#)
- When dual Routing Engines are inserted in the system and these logs come from the backup Routing Engine. Supercon fpga has two end point devices (for RE0 and RE1) in which the primary Routing Engine end point device is enabled and the backup Routing Engine is disabled in the hierarchy. During boot up, the backup Routing Engine tries to access [supercon fpga in pci] hierarchy that is disabled. Therefore, supercon scratch pad register read failure logs and pci uncorrected errors are seen. [PR1605797](#) and [PR1615157](#)
- On Feb restart, the evo-pfemand process that programs the Packet Forwarding Engine ASIC restarts. As the evo-pfemand restarts, it re-programs the system ports. The hardware linkscan thread that monitors the link status records a momentary link down or link up transition. Each time the linkscan thread observes a change, it sends out a notification. Due to state compression in DDS, consumer applications like Picd do not receive intermediate link-down status notification from evo-pfemand and the interface does not toggle. This is because the notifications are produced rapidly. The remote peer interfaces observe an interface down while some of the local interfaces remain up. [PR1608215](#)
- There are shifts in PLL for multiple speed changes within the SERDES macro of BCM that causes momentary link down or up during the port speed change. [PR1608223](#)
- While rebooting the system, the difference between time in which the interface comes up and the time in which RE1 comes up is approximately 3 minutes when compared to RE0 interface up time. [PR1608527](#)
- The syncE to PTP and syncE to 1pps transient response marginally fails. This happens when the servo get the initial 100 nano seconds jump in one measurement window and the next 100 nano seconds in the next measurement window adjusting less initially. [PR1608934](#) and [PR1611848](#)

- A restart of DHCP takes more time because of the internal issues with the SIGTERM event. [PR1610229](#)
- While sending traffic from both the core files or units, all (16) VOQs/connectors need credits from same port. As a result, credits are distributed per the weight ratio and flows that need higher credits get higher bandwidth than the others. [PR1611028](#)
- PTP to PTP noise transfer fails for frequency 0.03125 HZ [PR1611838](#)
- The syncE to PTP and syncE to 1pps noise transfer tests fail for 1. 0.00781 HZ 2. 0.01563 HZ 3. 0.03125 HZ 4. 0.06156 HZ 5. 0.12313 HZ frequencies. [PR1611911](#)
- A race condition between overlay and kernel deregister is seen. [PR1618133](#)
- Following scenarios warrant reboot or power cycle of the box.
 - Ungraceful removal of FRU without turning it offline.
 - Power failure in FRU.
 - PCI link failures in the system.

These issues can not be recovered in a live box and require reboot/power cycle. [PR1619368](#)

- The issue is specific to slot-7, where slot-7, port-13 is not supported. As part of channelization constraints, both adjacent ports have to configure or both to non channelization. Since slot-7 port is unsupported, need to ignore channelization constraints for port the two ports. [PR1620425](#)
- PE1 ---- P ---- PE2 ping mpls l2circuit does not work in case of explicit-null is configured in PE routers. It does not affect data path traffic. [PR1621111](#)
- In case of multicast replication mode as ingress-egress-recycle, load balancing in the aggregate Ethernet member interfaces does not occur. [PR1621377](#)
- Due to major code changes and more regression impact, no details of auto negotiation settings is available on 1GE interfaces. [PR1621991](#)
- On upgrading Junos OS Evolved, FPCs transition PowerOff -> PowerOnWait -> PowerOnPermission -> PowerOnStart. But there is a glitch while it was trying to PowerOn and state went to Empty state from PowerOnStart. This leads to Fpc::OnDelete where we set SetFrueDeleted(true); to true. However, it does not go for FpcFrueDeleteCleanup(fpc_name); fruedelete cleanup where we reset the SetFrueDeleted flag back to false as FPC is still in not ready state (FPC did not come online as dmf init not yet completed) and will defer the termination. [PR1623455](#)
- The user can configure a family ethernet-switching filter to match the dmac(01:80:c2:00:0e) and etype(0x88f7) and drop such packets. Configuration gives us the flexibility to install filter only for the services where the drop is needed and others can forward as required. [PR1623756](#)

- The error message is expected while creation of IRB intermittently, this has no functional impact [PR1625782](#)
- 400G-ZR optic transceiver firmware upgrade fails. It is a generic issue seen across all single RU platforms supporting QDD-400G-ZR. [PR1626882](#)

User Interface and Configuration

- In a rare event after configuring and deleting the DDL configuration statements such as `set chassis aggregated-devices` and `set interface ae1 aggregated-ether-options`, the configuration object gets out of scope with no functional impact. [PR1617667](#)

Resolved Issues

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Learn about the issues fixed in this release for ACX Series Routers.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

Resolved Issues: 21.4R1

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General Routing

- Egress IP MTU exception and fragmentation are not supported. [PR1558327](#)
- High CPU seen mostly with systemd with 4000 mac-vrf instances activate or deactivate. [PR1581283](#)
- PICD restart or crash might result in junk statistics for carrier transition. [PR1594253](#)
- Default CoS profiles applied to Layer 2 VPN and Layer 2 circuit logical interfaces are not shown in the output of `run show class-of-service-interface IF`. [PR1596342](#)
- Few label switched interfaces (LSI) MACs do not get properly learnt in the software with 8000 VPLS instance scale. [PR1597125](#)
- The egress access control list (ACL) actions are skipped for Broadcast, Unknown Unicast, and Multicast (BUM) traffic and does not hit. [PR1598489](#)
- The Address Resolution Protocols (ARPs) might not be resolved on the integrated routing and bridging (IRB) interface which is replaced by another IRB interface. [PR1600209](#)
- For ACX7100-32C and ACX7100-48L routers, the **Voltage Threshold Crossed** alarm might be observed sometimes. [PR1601493](#)
- Traffic loss might be observed when evo-pfemamd restarts. [PR1608004](#)
- Default dscp-ipv6-compatibility classification does not work when deactivating and then activating dscp-ipv6 classification scenario. [PR1614249](#)
- PCI device missing FPC[0] FPC supercon FPGA alarms are observed. [PR1615519](#)
- On performing `request system snapshot`, the snapshot message is not captured in the `/etc/motd` file. [PR1618946](#)
- On ACX7100-32C and ACX7100-48L, the `show system firmware` command some times might show current firmware version for FPC 0 as blank. [PR1618949](#)

Infrastructure

- Memory leak is observed in packet send path. [PR1620610](#)

User Interface and Configuration

- The `file copy` command does not accept HTTPS URLs. [PR1596881](#)

Junos OS Evolved Release Notes for PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016 Devices

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These release notes accompany Junos OS Evolved Release 21.4R1 for PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016 Packet Transport Routers. They describe new and changed features, limitations, and known and resolved problems in the hardware and software.

NOTE: The PTX10016 is supported in Junos OS Evolved Release 21.4R1. See Feature Explorer for the full list of supported features.

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Learn about new features introduced in this release for PTX Series Routers.

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To view features supported on the PTX platforms, view the Feature Explorer using the following links. To see which features were added in Junos OS Evolved Release 21.4R1, click the Group by Release link. You can collapse and expand the list as needed.

- [PTX10001-36MR](#)
- [PTX10003](#)
- [PTX10004](#)
- [PTX10008](#)
- [PTX10016](#)

The following sections highlight the key features in this release.

Hardware

- **BT temperature-based performance throttling (PTX Series)**—PTX devices have five BT (Bluetooth) ASICs, each capable of operating at 3.2Tbps for a total of 14.4Tbps per line card with various temperature sensors for software monitoring and alarm issuance. If the BT ASICs get too hot, the line card shuts down. Reducing the BT ASIC performance reduces power consumption and reduces the BT shutdown temperature. To avoid a shutdown on the line card, performance throttling is enabled by default. Use the command `set chassis fpc slot pfe pfe-id temp-perf-throttle disable` to disable performance throttling. `show chassis fpc slot pfe-instance detail` displays the real-time status of all the available PFEs and whether the temperature throttle is on. [See [fpc](#), [show chassis fpc](#), and [show system errors active](#).]

Device Security

- **Juniper Malware Removal Tool (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220)**—Starting in Junos OS Evolved Release 21.4R1, you can use the Juniper Malware Removal Tool (JMRT) to scan for and remove malware running on Junos OS Evolved devices. You can run two types of scans:

- Quick scan—To scan each running program file
- Integrity check—To check whether integrity mechanisms are enabled

[See [Juniper Malware Removal Tool](#) and [request system malware-scan](#).]

EVPN

- **VXLAN tunnel UDP source port entropy to support ECMP load balancing in EVPN-VXLAN fabrics (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, these routers use a software-supported method to provide source port entropy for ECMP load balancing on a VXLAN tunnel in an EVPN-VXLAN fabric. To support ECMP load balancing across a VXLAN tunnel, the device selects source port values based on a hash of fields in the VXLAN UDP packet inner header.

Before this release, these routers use the default hardware method that assigns only one UDP source port per VXLAN tunnel (based on the VXLAN egress port and the packet forwarding class).

[See [Load Balancing VXLAN Traffic](#).]

High Availability

- **NSR support for up to 2000 TCP connections (PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, PTX10004, PTX10008, and PTX10016 devices support NSR for up to 2000 TCP sessions. A maximum of 2000 BGP sessions are supported, and a maximum of 500

LDP or mLDP sessions, or a combination of both, are supported. Only node-level switchover is supported, application-level switchover is not supported.

Juniper Extension Toolkit (JET)

- **Support for programming FTIs using JET APIs (PTX1000, PTX10002, PTX10008, PTX10016, QFX5100, and QFX10008)**—Starting in Junos OS Evolved Release 21.4R1, you can use the Interfaces Service API to configure flexible tunnel interfaces (FTIs) in Junos OS. You can change the attributes of the tunnel configurations for the unit under an existing FTI but cannot change the existing tunnel encapsulation type using the APIs. For the following families, you can configure only the listed attributes when you use Juniper Extension Toolkit (JET) APIs:

- INET and INET6: address and destination-udp-port
- MPLS and ISO: destination-udp-port

[See [Overview of JET APIs](#) and [Configure Flexible Tunnel Interfaces](#).]

Junos Telemetry Interface

- **BGP enhanced state sensors (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 supports Junos Telemetry Interface (JTI) streaming new BGP resource paths.

[See [Telemetry Sensor Explorer](#).]

- **Chassis management configuration and counter support (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 supports JTI streaming of chassis management error (cmerror) configuration and counters to an outside collector using the UDP (native) sensors:

- /junos/chassis/cmerror/configuration
- /junos/chassis/cmerror/counters

[See [sensor \(Junos Telemetry Interface\)](#).]

- **CoS interface telemetry support (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 supports gRPC Network Management Interface (gNMI) streaming of CoS interface queue statistics. To stream statistics, use the resource path `/qos/interfaces/interface/output/queues/queue/state/`.

[See [Guidelines for gRPC and gNMI Sensors \(Junos Telemetry Interface\)](#).]

- **INITIAL_SYNC telemetry support (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 extends INITIAL_SYNC support for OpenConfig data model `openconfig-interfaces.yang` to new platforms. This feature lets the collector have a complete

view of the current state of every sensor it is subscribed to. INITIAL_SYNC requires that at least one copy of all the sensors be sent to the collector. This feature has gRPC and gNMI support.

We support these resource paths:

/interfaces/interface/

/interfaces/interface/ethernet

/interface/holdtime/state

/interfaces/interface/subinterfaces/subinterface/

- /interfaces/interface/
- /interfaces/interface/ethernet
- /interface/holdtime/state
- /interfaces/interface/subinterfaces/subinterface/

[See [Telemetry Sensor Explorer](#).]

- **INITIAL_SYNC telemetry support (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 extends INITIAL_SYNC support for OpenConfig data model openconfig-platform.yang and openconfig-alarms.yang to new platforms. This feature lets the collector have a complete view of the current state of every sensor it is subscribed to. INITIAL_SYNC requires that at least one copy of all the sensors be sent to the collector. This feature is supported with gRPC and gNMI.

We support the following resource paths:

- /components/component
- /system/alarms/alarm

[See [Telemetry Sensor Explorer](#).]

- **Pause frame receive and transmit counter support (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 includes JTI support for the sensor **/interfaces/interface/ethernet/state/counters/jnx-pfc-statistics** to stream pause frame counters from a router and transmit them to an outside collector.

Transport statistics using remote procedure call (gRPC), gNMI, or UDP (native).

[See [sensor \(Junos Telemetry Interface\)](#) and [Guidelines for gRPC and gNMI Sensors \(Junos Telemetry Interface\)](#).]

- **Packet Forwarding Engine sensor support (PTX10001-36MR, PTX10004, and PTX10008)**—Junos OS Evolved Release 21.4R1 has JTI support for enhanced counters in the following areas:

- Telemetry for device monitoring
- Hardware components that require support NPU (using the INTEGRATED_CIRCUIT type)
- Hardware drop reason counters
- IP-in-IP encapsulation and de-encapsulation counters
- Forwarding table occupancy

Transport statistics using gRPC or gNMI using the following resource paths:

- `/junos/system/linecard/packet/usage/`
- `/junos/system/linecard/npu/memory/`
- `/junos/system/linecard/npu/utilization/`

[See [Telemetry Sensor Explorer](#).]

- **Packet Forwarding Engine sensor support for non-viable aggregated interface member links (PTX10008 and PTX10016)**—Junos OS Evolved Release 21.4R1 has JTI support for non-viable aggregated interface member links. This feature does not support non-LAG link members. Use the resource path `/interfaces/interface/state/forwarding-viable` to stream statistics from a router to an outside collector by means of gRPC or gNMI.

[See [Telemetry Sensor Explorer](#).]

- **Platform sensors (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 includes JTI UDP streaming support for the sensors `/junos/system/cmerror/configuration/` and `/junos/system/cmerror/counters/`.

[See [Guidelines for gRPC and gNMI Sensors \(Junos Telemetry Interface\)](#).]

- **SR-TE colored policy RIB5 and SR-TE colored telemetry sensor support (PTX10008)**—Junos OS Evolved Release 21.4R1 introduces JTI streaming and ON-CHANGE sensors that deliver operational state statistics for Segment Routing–Traffic Engineering (SR-TE) colored policy RIB5 and SR-TE colored telemetry sensors. Statistics are delivered to an outside collector using gRPC or gNMI. Included are new OpenConfig resource paths for existing and new SR-TE policy (tunnel) and SR-TE per-LSP colored statistics.

[See [Telemetry Sensor Explorer](#).]

- **SR telemetry sensor enhancements (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 supports segment routing sensor enhancements for per SID level and interface level traffic counts. These changes comply with the current supported sensors in the OpenConfig models `openconfig-segment-routing.yang` and `openconfig-mpls.yang`.

We've included new resource paths with the enhancements:

- `/network-instances/network-instance/mpls/signaling-protocols/segment-routing/interfaces/interface/interface-ref/state/interface` ['et-1/0/1']
- `/network-instances/network-instance/mpls/signaling-protocols/segment-routing/interfaces/interface/interface-ref/state/subinterface` [0]

[See [Telemetry Sensor Explorer](#).]

Layer 2 VPN

- **Support for Layer 2 services on SR-TE tunnels using transport class (PTX10008)**—Starting with Junos OS Evolved Release 21.4R1, you can configure the following L2 services on colored and noncolored segment routing–traffic engineering (SR-TE) tunnels using transport classes:
 - L2 circuits
 - L2 VPN

[See [Understanding BGP Classful Transport Planes](#) , [Configuring Interfaces for Layer 2 Circuits](#), and [Understanding Layer 2 VPNs](#).]

- **Layer 2 VPN for FAT label (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Starting with Junos OS Evolved Release 21.4R1, we support Flow Aware Transport for Pseudowires (FAT) labels on ingress routers, with parsing that includes all the payload fields in the hash calculation.

We support the following labels:

- L2 circuit, LDP-signaled pseudowires
- L2 VPN, BGP-signaled pseudowires
- L2 VPN with FEC129 (BGP autodiscovery)

Enable flow labels using the `flow-label-transmit` and `flow-label-receive` statements at the `[edit protocols l2circuit neighbor neighbor-id interface interface-name]` hierarchy level. Issue the `show ldp database extensive` command to display database information received from and advertised to the peer. Issue the `show l2circuit connections` command to see the status of the flow label after an exchange of signaling information.

[See [flow-label-receive](#) and [flow-label-transmit](#).]

Network Management and Monitoring

- **DHCP stateless relay MIB support (PTX10001-36MR, PTX10004, PTX10008, PTX10016, QFX5130, and QFX5220)**—Starting in Junos OS Evolved Release 21.4R1, you can use the Juniper Networks enterprise-specific DHCPv6 and DHCPv6 MIBs to retrieve statistics for DHCP stateless relay. We provide support only for the following MIB objects:

- jnxJdhcpRelayStatistics
- jnxJdhcpRelayIfcStats
- jnxJdhcipv6RelayStatistics
- jnxJdhcipv6RelayIfcStats

[See [Enterprise-Specific MIBs for Junos OS Evolved](#).]

- **NETCONF sessions over TLS (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, you can manage devices by running Network Configuration Protocol (NETCONF) sessions over Transport Layer Security (TLS). TLS uses mutual exchange of X.509 certificates for authentication to ensure the data integrity of exchanged messages.

[See [NETCONF Sessions over Transport Layer Security \(TLS\)](#).]

- **SNMP support for SCU and DCU counter (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, the SNMP MIB tables, jnxDcuStatsTable, jnxDCUsTable, and jnxScuStatsTable displays the source class usage (SCU) and destination class usage (DCU) statistics .

[See [Enterprise-Specific MIBs for Junos OS Evolved](#).]

- **SNMP MIB support for ICMP (ACX7100-32C, ACX7100-48L,, PTX10001-36MR, PTX1003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220, and QFX5700)**—Starting in Junos OS Evolved Release 21.4R1, we've added support for the following RFC4293 tables:

- icmpStatsTable—Generic system-wide ICMP counters
- icmpMsgStatsTable—System-wide per-version and per-message type ICMP counters

[See [Standard MIBs for Junos OS Evolved](#).]

OpenConfig

- **OpenConfig LACP configuration support (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 21.4R1 introduces LACP OpenConfig configuration support based on OpenConfig data model openconfig-lacp.yang.

[See [OpenConfig User Guide](#).]

- **OpenConfig LLDP configuration support (PTX10001-36MR, PTX10003, PTX10004, PTX10008 and PTX10016)**—Junos OS Evolved Release 21.4R1 introduces LLDP OpenConfig configuration support based on OpenConfig data model openconfig-lldp.yang.

[See [OpenConfig User Guide](#).]

- **OpenConfig routing policies and options configuration support (PTX10008 and PTX10016)**—Junos OS Evolved Release 21.4R1 introduces OpenConfig routing policies and options configuration support to new platforms. OpenConfig configuration support is based on the OpenConfig data models:

- openconfig-network-instance.yang
- openconfig-routing-policy.yang
- openconfig-local-routing.yang

Additional OpenConfig augmentation for Junos CLI configurations that are not provided through these OpenConfig models is provided through the following data models:

- jnx-aug-openconfig-ni.yang
- jnx-aug-openconfig-routing-policy.yang
- jnx-aug-openconfig-local-routing.yang

[See [OpenConfig User Guide](#)].

- **System OpenConfig configuration support and gNMI mixed-mode support (PTX10008 and PTX10016)**—Junos OS Evolved Release 21.4R1 introduces OpenConfig configuration support for OpenConfig data models:

- System Model openconfig-system.yang
- System Logging Model openconfig-system-logging.yang
- System Management Model openconfig-system-management.yang
- System Terminal Model openconfig-system-terminal.yang

[See [OpenConfig User Guide](#)].

Routing Policy and Firewall Filters

- **Layer 2 and layer 3 support for flood policers (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, you can configure firewall filters for flood policers on L2 (family CCC) and L3 (family any) traffic, in both the ingress and egress directions. Most match conditions (except Packet-length) and most actions are supported.
- **Support for forwarding class and PLP as policer actions (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, you can use forwarding class, and both forwarding class and packet loss priority (PLP) together, as policer actions in policer policy configurations. This includes both the ingress and egress directions.

- **Support for input-chain and output-chain CLI filters (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Starting from Junos OS Evolved Release 21.4R1, you can use multiple levels of CLI filters. The filter chain helps in logically grouping filters with a specific pattern of rules, instead of evaluating all the filter terms in one filter and deciding at the last term of it. The feature provides you the flexibility in modeling the filters as and when it is applicable in the solution. You can configure up to 8 filters in both input-chain and output-chains.

You can apply the filter chain as follows:

```
set interfaces interface-name unit unit family inet filter input-chain [filter1 filter2 filter3];
```

```
set interfaces interface-name unit unit family inet filter output-chain [filter1 filter2 filter3];
```

[See [input-chain](#), [output-chain](#), and [Example: Using Firewall Filter Chains](#).]

Routing Protocols

- **Enhanced support to handle S flag, D flag and A flags in IS-IS (PTX10001, PTX10001-36MR, PTX10003, PTX10004, and PTX10008)**—Starting in Junos OS Evolved Release 21.4R1, you can set the S flag to allow the label binding type, length and values (TLV) to leak through the IS-IS level (Level 1 or Level 2). You can set the A flag to program the penultimate-hop popping (PHP). You can set the D flag to prevent the leaking of the label binding TLV from Level 2 back to Level 1. Use the `no-binding` configuration statement at the `[edit protocols isis source-packet-routing no-binding-sid-leaking]` hierarchy level to disable label binding TLV leaks.

[See [Handling of the IS-IS Binding SID 'S' Flag and RFC 7794 Prefix Attribute Flags](#).]

- **Service to correlate FPCs with P2MP sub-LSPs (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, you can correlate FPCs with point-to-multipoint (P2MP) sub-LSPs. An FPC can act as an ingress, egress, or transit point for more than one sub-LSP of the same P2MP LSP. If an FPC fails, then all the sub-LSPs that it serves are affected.

You can configure a service that enables you to monitor the correlation between FPCs and the P2MP sub-LSPs—branch paths—that are on an LSR. This information helps you evaluate the effect a failed FPC has on the correlated sub-LSPs. When you enable tracing, the service also provides system log messages (during an FPC outage) that provide detailed information about the sub-LSPs affected.

[See [Configuring a Service to Correlate Point-to-Multipoint sub-LSPs with FPCs](#).]

- **Support for FAD and FAPM on the traffic engineering database and BGP-LS (PTX10001-36MR, PTX10003, PTX10004, and PTX10008)**—Starting in Junos OS Evolved Release 21.4R1, we support Flex ALgo Definition (FAD) and Flex Algo Prefix Metric (FAPM) on traffic engineering database and BGP-LS. You can store FADs and FAPMs into TED and BGP Link-State and store multiple prefix-sids for a prefix into BGP Link-State. You can import the FAD and FAPM entries from the traffic engineering database to BGP-LS and export the FAD entries from BGP-LS to the traffic engineering database.

[See [What is Flexible Algorithm Definition \(FAD\)](#).]

- **Support for IPv6 ping, IPv6 traceroute, and ECMP traceroute for Labeled-IS-IS segment routing paths (PTX10001-36MR, PTX10003, PTX10004, and PTX10008)**—Starting in Release 21.4R1, Junos OS Evolved supports IPv6 ping, IPv6 traceroute, and ECMP traceroute for Labeled-IS-IS segment routing paths.

[See [ping](#) and [traceroute mpls segment-routing isis](#).]

- **Support for link delay measurement and advertising in IS-IS (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, you can measure and advertise various performance metrics in IP networks with scalability, by using several IS-IS probe messages. These metrics can then be used to make path-selection decisions based on network performance.

[See [How to Enable Link Delay Measurement and Advertising in IS-IS](#).]

Services Applications

- **Export BGP community and AS path information using IPFIX (PTX Series)**—

Starting in Junos OS Evolved Release 21.4R1, you can export BGP community and AS path information using IP Flow Information Export (IPFIX) information elements 483 through 491, 16, and 17, per RFCs 8549 and 6313. Content providers can use this information to identify a transit service provider degrading the quality of the service. You configure these elements with the statement `data-record-fields` at the `[edit services flow-monitoring version-ipfix template template-name]` hierarchy level.

[See [Understand Inline Active Flow Monitoring](#).]

- **MPLS support for FTI tunnels (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 21.4R1, you can configure MPLS protocols over FTI (flexible tunnel interface), thereby transporting MPLS packets over IP networks which does not support MPLS. GRE and UDP tunnels support MPLS protocol for both IPv4 and IPv6 traffic. You can configure encapsulation and de-encapsulation for the GRE and UDP tunnels.

To allow the MPLS traffic on the UDP tunnels, include the `mpls port-number` statement at the `[edit forwarding-options tunnels udp port-profile profile-name]` hierarchy level. To allow the MPLS traffic on the GRE tunnels, include the `mpls` statement at the `[edit interfaces fti0 unit unit family]` hierarchy.

[See [Flexible Tunnel Interfaces Overview](#).]

Software Installation and Upgrade

- **Support for outbound SSH service (PTX10001-36MR, PTX10003, PTX10004, PTX10008, QFX5130-32CD, QFX5220-32CD, and QFX5220-128C)**—Starting in Junos OS Evolved Release 21.4R1, we support outbound SSH service.

You can use the `restart service-deployment` command to restart the Service Deployment System (SDX) process.

[See [outbound-ssh](#).]

Additional Features

We've extended support for the following features to these platforms.

- **Avoid microloops in IS-IS segment routing MPLS networks (PTX Series)**—Starting in Junos OS Evolved Release 21.4R1, you can enable post-convergence path calculation on a device to avoid microloops between network devices.

[See [Understanding Microloop Avoidance](#).]

- **BGP and statically configured SR-TE traffic statistics sensor support for JTI (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**

[See [Guidelines for gRPC and gNMI Sensors \(Junos Telemetry Interface\)](#), [Understanding OpenConfig and gRPC on Junos Telemetry Interface](#), and [source-packet-routing](#) .]

- **Forwarding information base (FIB) sensor support on JTI (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**

[See [Telemetry Sensor Explorer](#).]

- **Forwarding information base (FIB) sensor support on JTI (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Use JTI and gRPC services to stream or export ON_CHANGE FIB (also known as *forwarding table*) statistics from routers to outside collectors. This feature supports the OpenConfig YANG model OC-AFT.

[See [Telemetry Sensor Explorer](#).]

- **GPS and BITS interface support (PTX10008)**—

- 10MHz clock input and output support
- BITS input and output on T1/E1 framed and 2.048MHz unframed clock input

[See [Centralized Clocking Overview](#).]

- **ICMPv6 and ARP statistics support for Junos EVO platforms (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5700)**—The existing ARP and ICMPv6 statistics reports are enhanced to support the following statistics.

- ARP
 - Proxy requests

- Requests dropped on entry
- Number of arp packets dropped as nexthop allocation failed
- ICMPv6
 - Output histogram—unreach, echo request, echo reply, neighbor solicitation, neighbor advertisement, router solicitation, and router advertisement details
 - Input histogram—unreach, echo request, echo reply, neighbor solicitation, neighbor advertisement, router solicitation, and router advertisement details
 - messages with bad code fields, messages < minimum length, bad checksums, messages with bad length
 - message responses generated, messages with too many ND options, current public ND nexthops present
 - [See [show system statistics arp](#) and [show system statistics icmp6](#)]
- IPsec support for OSPFv2 and OSPFv3 (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10008, PTX10016, QFX5130-48C, and QFX5220)

[See [Overview of IPsec](#), [Configuring OSPF Authentication](#), and [Configuring IPsec Security Associations](#).]
- LACP minimum link with sync reset and micro BFD configuration support (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)

[See [Configuration Guidelines for Micro-BFD Sessions](#).]
- MACsec fallback preshared key (PSK) and timer-based SAK refresh (PTX10001-36MR and PTX100016)

[See [Configuring MACsec with Fallback PSK](#).]
- New firewall filter feature: shared-bandwidth and percentage policers on the BT chip (PTX10003)

[See [Configuring the Filter Profile](#).]
- Packet Forwarding Engine restart (PTX10003-80C and PTX10003-160C):
 - GRE tunnel encapsulation and de-encapsulation
 - Unicast RPF

[See [Powering Off Packet Forwarding Engines](#) .]
- Physical Ethernet Interface sensor support on JTI (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)

[See [Telemetry Sensor Explorer](#).]

- **SNMP support for LACP and LAG MIB objects (PTX10001-36MR, PTX10008, and PTX10016)**

[See [Enterprise-Specific MIBs for Junos OS Evolved](#) and [SNMP MIB Explorer](#).]

- **Support for Application Specific Link Attributes (ASLA) for flexible algorithms (PTX10001-36MR, PTX10008, PTX10016):** IS-IS supports advertising different te-metric and admin-groups for RSVP and flexible algorithm on the same link using flexible-algorithm specific ASLA as defined in RFC 8919.

[See [Understanding IS-IS Flexible Algorithms for Segment Routing](#) .]

- **Support for disable, offline and restart of individual PFEs with error log and action, using `request chassis pfe` and `set chassis fpc` commands for specific line cards (PTX10K-LC1202-36MR) on PTX series devices.**

[See [request chassis fabric pfe](#) and [fpc \(PTX Series Routers\)](#).]

- **Support for EVPN Type 5 routes for Layer 2 and Layer 3 VXLAN gateways with overlay load balancing in an EVPN-VXLAN network (PTX10001-36MR, PTX10004, and PTX10008)**

[See [Understanding EVPN Pure Type-5 Routes](#) and [EVPN Type-5 Route with VXLAN encapsulation for EVPN-VXLAN](#).]

- **Support for G.8275.1 profile, Precision Time Protocol over Ethernet encapsulation, and Hybrid mode (PTX10008)**

[See [G.8275.1 Telecom Profile](#), [Guidelines for Configure PTP over Ethernet](#), and [Hybrid Mode Overview](#).]

- **Support for inner VLAN transparency (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**

We support the pop/push/swap/pop-pop/pop-swap/swap-push/push-push/swap-swap operations on port-based and VLAN-based Metro Ethernet Forum (MEF) L2 services. VLAN transparency refers to preserving inner VLANs in the packet that are not subject to manipulation and are not used for forwarding. Based on the scenarios, VLAN transparency works on up to four VLAN tags on BT ASICs.

[See [Understanding VLAN Manipulation \(Normalization and VLAN Mapping\) on Ethernet Services](#).]

- **Support for MIB accounting profiles (PTX10001-36MR, PTX10004, PTX10008, PTX10016, and QFX5220)**

[See [Accounting Profiles: An Alternative to SNMP Statistics](#).]

- **Support for PIM multicast features on Layer 2 IRB interface (PTX10001-36MR and PTX10004)**

[See [Multicast Routing Protocols](#).]

- **Supported transceivers, optical interfaces, and DAC cables (ACX Series, PTX Series, and QFX Series)**
—Select your product in the [Hardware Compatibility Tool](#) to view supported transceivers, optical interfaces, and DAC cables for your platform or interface module. We update the HCT and provide the first supported release information when the optic becomes available.

- **Telemetry stream path resolution by MPLS and RSVP interfaces (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**

[See [Telemetry Sensor Explorer](#).]

- **VRRP support (PTX10001-36MR, PTX10003, PTX10004, and PTX10008):** Support for advertisement interval at 1 second and interworking of VRRP version 2 and VRRP version 3.

- VRRP active inheritance support
- VRRP tracked routes and tracked interfaces
- VRRP support for IPv4 and IPv6
- VRRP support at physical, aggregated Ethernet, and IRB IFL-level interfaces
- VRRP support over the single tagged interface
- VRRP support in centralized and delegated mode

[See [Understanding VRRP](#) .]

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What's Changed in Release 21.4R1

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EVPN

- **Output for the show Ethernet switching flood extensive command**—The output for the `show ethernet-switching flood extensive` command now displays the correct next-hop type for Virtual Ethernet and WAN mesh group in an EVPN-VXLAN network as unilist. Previously, the output for the `show ethernet-switching flood extensive` command would misidentify the next-hop type as composite.

General Routing

- **Validation of TCA threshold values (PTX10008)**—We've implemented immediate validation of threshold values configured in the `tca-identifier (enable-tca | no-enable-tca) (threshold number | threshold-24hrs number)` statement under the `[edit interface <interface name> optics-optics tca]` hierarchy level to ensure the threshold value entered is valid.

[See [optics-options..](#)]

- **Enhancement to the request system license add terminal command (PTX10001-36MR)**—When you run the `request system license add terminal` command, you can now view following additional fields for information: JUNOS564022985: Ignoring unknown feature.

[See [Managing vMX Licenses.](#)]

- **A major alarm is raised (PTX10008)**—A major alarm is raised when a fan tray controller is removed from the chassis.
- **SNMP MIB support for field-replaceable unit (FRU) LEDs (PTX10008)**—SNMP MIB object `jnxLEDEntry` now indicates multiple LED indexes and color values for FRUs.

Interfaces and Chassis

- When configuring multiple flexible tunnel interface (FTI) tunnels, the source and destination address pair needs to be unique only among the FTI tunnels of the same tunnel encapsulation type. Prior to this PR, the source and destination address pair had to be unique among all the FTI tunnels regardless of the tunnel encapsulation type.

Network Management and Monitoring

- **SNMP support for MIB**—Operational command `show snmp mib walk systemnow` shows the latest software version and does not show the build date.

[See [show snmp mib](#).]

- **Support for disconnecting unresponsive NETCONF-over-SSH clients (ACX Series, PTX Series, and QFX Series)**—You can enable devices to automatically disconnect unresponsive NETCONF-over-SSH clients by configuring the `client-alive-interval` and `client-alive-count-max` statements at the `[edit system services netconf ssh]` hierarchy level. The `client-alive-interval` statement specifies the timeout interval in seconds, after which, if no data has been received from the client, the device requests a response. The `client-alive-count-max` statement specifies the threshold of missed client-alive responses that triggers the device to disconnect the client, thereby terminating the NETCONF session.

[See [ssh \(NETCONF\)](#).]

- **The configuration accepts only defined identity values for nodes of type `identityref` in YANG data models (ACX Series, PTX Series, and QFX Series)**—If you configure a statement that has type `identityref` in the corresponding YANG data model, the device accepts only defined identity values (as defined by an `identity` statement) as valid input. In earlier releases, the device also accepts values that are not defined identity values.

Known Limitations

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Learn about known limitations in Junos OS Evolved Release 21.4R1 for PTX Series Routers.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

General Routing

- Restarting the fabspoked-pfe application for the line card, restarts the line card. [PR1486023](#)
- By default, the IPv6 addressing gets configured with 64 subnet irrespective of the subnet configured on the DHCP server side. [PR1539839](#)
- On all Junos OS Evolved platforms, when the nexthop gets added or changed to Packet Forwarding Engine and the same next-hop gets forwarded to nexthop of an indirect route, if the ingress Packet Forwarding Engine is faster than the egress Packet Forwarding Engine, this causes packet loss as the ingress Packet Forwarding Engine being faster is seen the new forward nexthop and also an indirect change. However, the egress Packet Forwarding Engine being slower is not consumed indirect change yet. [PR1547432](#)
- The PTP FPGA is in the reset mode during BIOS boot. During Linux boot, the PTP FPGA is taken out of the reset mode and the pcie-tree is re-enumerated. Therefore, the link goes up or comes down when this sequence occurs. [PR1572061](#)
- On PTX10001-36MR routers, which is a fixed form factory system with a single CPU, the FPC is a logical one. There is no dedicated CPU to handle the FPC processes and there are three different processes that handle the Packet Forwarding Engine functionality. Also, there is no dedicated memory reserved for the Packet Forwarding Engine processes, due to which it is not feasible to figure out the percentage of CPU or memory utilization by the FPC. Hence, the `show chassis fpc` output does not display a percentage for neither the CPU or memory computed. [PR1586907](#)
- Configuring a 400G ZR link with 4x100GE channelized mode on one end and 1x400GE on the other end results in link status mismatch. The 1x400GE port gets displayed with the port in the Up state even when the port is in the Down state. [PR1597707](#)
- On PTX10001-36MR routers, PTP TC over IPv6 does not meet the T1/T4 error for 4x25G mode when connected between two retimer ports (retimer-----retimer), that is port 4 to port 7 in each PIC. This does not impact the basic PTP TC over IPv6 functionality and other performance metrics such as the two-way time error. cTE and dTE meets class B for all the port combinations. [PR1609110](#)
- Ungraceful FRU removal results in CRC errors on the peer FRUs, that might potentially wedge the Packet Forwarding Engines. [PR1615297](#)
- Traffic convergences, interface deactivates/disables, and deletes one of the SRTE path in a policy in two different scenarios. During these periods, the hardware counters gets deleted and added again

for new paths where traffic flows. During this transient period of time counting, the statistics do not increment and as per the design SR statistics counters, reading from hardware occurs every 4 seconds. By any chance, if the convergence and interfaces triggers right after reading the hardware counters, then there no statistics will increment for that 4 seconds of time period. [PR1630517](#)

- The request `system node reboot<>` command restarts the FRU ungracefully. On an ungraceful FRU restart, transient link errors on peer FRU appears. [PR1630787](#)

Network Management and Monitoring

- Configuring the `set system no-hidden-commands` command must not block the netconf sessions. As a workaround, you must disable the `no-hidden-commands` command. [PR1590350](#)

Routing Protocols

- Protocols might not restart gracefully on a scaled setup with the `restart routing gracefully` command due to which longer time is consumed in synchronizing the routing states during restart. (It takes around 4 minutes 20 seconds for protocols to start again after restart with 2.8m routes). [PR1575626](#)

VPNs

- ASIC does not have a way to drop the packets with invalid configuration while packets go out. Hence, the unsupported VLAN rewrite configuration might send packets out with wrong VLAN encapsulation. [PR1627484](#)

Open Issues

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Learn about open issues in Junos OS Evolved Release 21.4R1 for PTX Series Routers.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

Class of Service (CoS)

- Cosd generates a core file only with the show command consistently while the ifd scheduler map bindings do not get updated correctly or in a Transition state during the booting time, and initiates the show interface <ifd-name> name command. The cosd application recovers after the crash and does not affect any other programming. As a workaround, wait until all the interfaces are in the Up state and complete the interface binding configurations commit before triggering the show interface <if-name> extensive command. [PR1604169](#)
- With the scale configuration and NSR switched on, the cosd (Class of service control plane) application generates core files with multiple Routing Engine switchover. Most of the time, the cosd application recovers automatically. The status of cosd application after the Routing Engine switchover displays the following message:

```
root@ptx10008-pfe-03-re0> show system applications app cosd
Applications Information:
Application : cosd
Node : re0 App
App State : online ready
App Weight : 1
App Zookeeper Session : 50000024b200036
Object Producer details
Producer ID : 50331769
```

```
Epoch ID : 70
Production Topic : /Root/cosd/5443209913770603356
Producer State : active

Command to restart cosd (Manual)
root@scapa-pfe-03-re0> request system application node re0 app cosd restart
This may affect traffic in the system. Proceed ? [yes,no] (no) yes
App cosd on node re0 restart request is submitted
Note: use re0 or re1 based on the mastership
```

[PR1620758](#)

Fault Management

- When the system is up on the FPC log, the Packet Forwarding Engine generates the following error message:

```
Jexpr: JexprHandleDdos faile to update plct pfe:1f proto:0x8400 will be seen.
```

This error message does not have functional impact with this log error messages.

[PR1610764](#)

General Routing

- Changing decapsulation of only the tunnel destination address configuration after tunnel is up might not work and end up using the previously configured tunnel destination address for the decapsulation. After the system enters this state, any further configuration changes to tunnel configuration cannot be handled. [PR1575724](#)
- When a aggregated Ethernet interface link is brought down, a transient error message [Error] Nexthop: EalNhHandler: failed to add Nh: xxxx, type: composite, as pil add failed might be generated. There is no functional impact due to these errors. [PR1570710](#)
- Vulnerability during the handling of exceptional conditions in Juniper Networks Junos OS Evolved allows an attacker to send specially crafted packets to the device, causing the Advanced Forwarding Toolkit manager (evo-aftmand-bt or evo-aftmand-zx) process to crash and restart. This impacts all the traffic going through the FPC, resulting in a Denial of Service (DoS). For more information, please refer to <https://kb.juniper.net/JSA11188>. [PR1572969](#)

- IPv6 based PKID enrollment operations are not supported over revenue ports on all Junos OS Evolved platforms. [PR1584378](#)
- When all the Packet Forwarding Engines are in the `Offline` state and being in the `Online` state with multicast route being active during this cycle, the multicast traffic gets lost permanently due to the absence of multicast route. [PR1598894](#)
- sFlow ingress sampling reports incorrect OIF and nexthop with user IPv6 traffic in the ECMP scenario at the last hop router with the Ultimate Hop Pop LSP. [PR1602448](#)
- The AFT Firewall sensor keys are different from that of Junos OS and cause a behavioral change. However, the requirement of having the complete path (prefix and key) of a filter attribute to remain intact is still achieved. [PR1606209](#)
- On PTX10016 routers with a fully loaded chassis and all the FPCs being in the `Online` state, if you take a SIB offline or online, the fabric link training takes around 10 minutes. [PR1611753](#)
- When you use 400G or 4x100G interfaces using 400G-ZR optics, after the data path of the optics gets powered up and Tx laser enabled, sometimes the actual transmitting power might appear very low. Inside 400G-ZR software driver, a check-and-recovery mechanism has been implemented. If the actual Tx power appears very low after powering up and enabling Tx laser, a data path powering-down and re-init sequence gets exercised. The Tx power level gets recovered back to normal. After such hardware issue appears, the actual link up time appears longer than expected. [PR1616445](#)
- On the scaling system, load override and commit of the baseline configuration causes the rpd to spin high on the CPU. As GRPC configuration gets removed, sensors must be uninstalled. But, rpd does not respond to these telemetry sensors uninstallation requests failing the sensors uninstallation. Later, when you enable GRPC back on the box and request same sensor profile (`cfg.json` file used with `jtmon`) from collector, the rpd sends packets with higher sequence numbers. (Because the sensor is not removed from the rpd earlier and considered as drops by the collectors, which rely on sequence-numbers). [PR1621347](#)
- Errors do not appear until there is a composite nexthop with two labels in the nexthop. This scenario must not appear and there is no impact in behavior. [PR1621689](#)
- On PTX10008 routers, few frequencies might fail to meet the mask. The following result is the expected performance for PTP-PTP and PTP-1PPS:

```
Profile Freq (Hz) PTP 1PPS NoiseTransfer_0_00391_Results PASS PASS
NoiseTransfer_0_00781_Results PASS PASS NoiseTransfer_0_01563_Results FAIL FAIL
NoiseTransfer_0_03125_Results FAIL FAIL NoiseTransfer_0_06156_Results FAIL FAIL
NoiseTransfer_0_12313_Results PASS PASS NoiseTransfer_0_24625_Results PASS PASS
NoiseTransfer_0_4925_Results PASS PASS NoiseTransfer_0_985_Results PASS PASS
NoiseTransfer_1_985_Results PASS PASS
```

PR1624478

- On PTX10008 routers, few input PTP & SyncE-1pps noise transfer test frequencies might fail. The following result is the expected performance :

```
Profile Freq (Hz) NoiseTransfer_0_00391_Results PASS PASS
NoiseTransfer_0_00781_Results FAIL FAIL NoiseTransfer_0_01563_Results FAIL FAIL
NoiseTransfer_0_03125_Results FAIL FAIL NoiseTransfer_0_06156_Results FAIL FAIL
NoiseTransfer_0_12313_Results FAIL FAIL NoiseTransfer_0_24625_Results PASS PASS
NoiseTransfer_0_4925_Results PASS PASS NoiseTransfer_0_985_Results PASS PASS
NoiseTransfer_1_985_Results PASS PASS NoiseTransfer_3_985_Results PASS PASS
NoiseTransfer_7_985_Results PASS PASS
```

PR1624502

- On PTX Evolved platforms with a mac-vrf instance configured with VLAN aware service, BUM(Broadcast Unicast Multicast) flooding issue might occur on the ESI (Ethernet Segment Identifier) interfaces and packets might get dropped on the egress PE devices. [PR1624677](#)
- The CDA application crashes as soon as FPC boots up that results in fabricPfeE object not being published. Hence, the fabricPfeE objects do not get created or deleted. SIB endpoints cleanup are dependent on the deletion of the fabricPfeE objects. Stale SIB fabric endpoints prevent fabric link to bring up in further FPC reboots. [PR1624765](#)
- On PTX10008 routers, transient JSR replication error messages 113 / 115 gets generated when you disable or enable OSPF. No functionality impact as NSR gets enabled again quickly on all protocols after the error messages. The error messages also gets generated when the rpd-agent crashes. [PR1627625](#)
- The switch from 10M to 5M (or 1M), when you configure both output and source for GPS ports (i.e output and source configuration), the REF status does not get updated in the table. This causes incorrect status to be displayed for the Clock Status and Clock Event. 2. When you change the signal type to 10M from other frequencies, the DPLL remains in the Holdover state. As a workaround to restore the normal behavior, deactivate and activate the chassis synchronization command. [PR1631689](#)
- On PTX10008 routers, the transit CCM sessions comes up but transit oopback(LB) ping or LinkTrace(LT) PDUs does not go through. [PR1632255](#)
- On PTX10008 routers, FPC JNP10K-LC1201 frequently generates the following error message:

```
zephyr_clock_get_tod_ext_sync_sample(xxx): READ BT-X tod_sec: xxxxxxxxxx, tod_ns: xxxxxxxxxx
```

PR1635771

- In a scaled environment, it might take up to five minutes to gather and display the p2mp LSP correlation information. [PR1629771](#)
- On PTX10008 routers, after testing the laser-off link member to bring the aggregated Ethernet interface down, the following error message gets generated:

```
[Error] Nexthop: fail to get target nh facad for indr nh 20209, [Error] Nexthop:
EalIndirectNh::add: failed to get target nh for nh id: 20209, [Error] Nexthop: NH add during
change major failed for NH 20209, status:1000
```

[PR1617388](#)

- On PTX10008 routers, the rpd process generates a core file at rt_evo_free_sesid_info in the backup Routing Engine. [PR1607553](#)

Infrastructure

- When you use a source IP address as the management interface with RPF check set to strict on the interface, the response for the ICMP ping from the peer on the management interface gets dropped by the Linux kernel. The Linux kernel expects the path to the peer to be on the WAN side. [PR1498255](#)
- GRES gets triggered through the request chassis routing-engine master switch command that starts displaying the following connector driver overlay messages:

```
{master} root@ptx10004-05-re0> [ 1185.081257] gpio-jnx-i2cs gpio-jnx-i2cs.50: Asserting
power_status irq 59
[ 1185.125182] OF: overlay: overlay_is_topmost: #9 clashes #10 @/ftc0/i2c-bus/i2cs@54/
fan_hwmon
[ 1185.125183] OF: overlay: overlay #9 is not topmost
```

[PR1539232](#)

- Rebooting the PTX10003 router during a broadcast storm on the management port might cause a fault on the router. [PR1423216](#)

Interfaces and Chassis

- The local switching traffic sequence number does not reset. [PR1560111](#)
- On PTX10003 routers, the SNMP mib walk on jnxLEDTable fails. [PR1620398](#)

Juniper Extension Toolkit (JET)

- From Junos OS Evolved 20.4 Release, there are two different grpc python files for each JAPI file. The names of the files are `*pb2_grpc.py` and `*pb2.py`. The stub creation functions are present in the `*pb2_grpc.py` file. [PR1580789](#)

MPLS

- In Junos OS Evolved platforms, the LDP session does the authentication key-chain configuration based on the session remote-id on initiator stop from the session establishment even though you configure the authentication key-chain of the responder for the responder remote-id. [PR1592431](#)

Network Management and Monitoring

- The mgd process might crash when you configure an invalid value though JSON and XML load for the identityref type leafs or leaf-lists while configuring Openconfig or any other third-party YANG. The issue occurs with the JSON and XML loads. [PR1615773](#)

Routing Protocols

- This scenario occurs when you enable the IS-IS authentication key-chain that have multiple keys between the routers. The IS-IS adjacency is up since both routers have the same key active. When you manually change the system time in such a way that the routers have different keys active in the key chain, the IS-IS adjacency must go down, which does not happen. [PR1572441](#)

User Interface and Configuration

- For the list definition `list bar { key foo; leaf foo { type uint8; } leaf baz { type string; } }`, Junos cannot parse the `{ "bar": [{ "baz": "zig", "foo": 123 }, { "baz": "zag", "foo": 0 }] }` configuration payload where 'leaf foo' (key as per Yang model) does not appear as a first element. Junos understands only `{ "bar": [{ "foo": 123, "baz": "zig" }, { "foo": 0, "baz": "zag" }] }` kind of configuration payload where 'leaf foo' (key as per Yang model) appears as a first element. As per Junos, the list keys are always required (must always) to precede any other siblings within a list entry and appear in the order specified by the data model. [PR1616216](#)
- In a rare event after configuring and deleting the DDL commands, the configuration object correctly gets out of scope. However, the configuration does not get released due to a shared reference set chassis aggregated-devices set interface ae1 aggregated-ether-options command. There is no functional impact and the situation can be cleared by restarting the configuration daemon from **CLI--> configd > restart configd**. [PR1617667](#)

Resolved Issues

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Learn about the issues fixed in this release for PTX Series Routers.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

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Authentication and Access Control

- The ssh process crashes on Junos OS Evolved platforms. [PR1601150](#)
- The root password might not be accepted under su on the Junos OS Evolved platforms. [PR1607861](#)

Class of Service (CoS)

- The MPLS fixed classifiers might not work on the Junos OS Evolved platforms. [PR1616492](#)

General Routing

- New alarm is reported for three consecutive failures on a particular fan tray (this can be power or fan failure). [PR1500920](#)
- The device might run out of service post GRES or unified ISSU. [PR1558958](#)
- `request system zeroize` command does not delete snapshot images from the backup hard disk drive. [PR1569294](#)
- The static MACs configured over the aggregated Ethernet interface might not get programmed while forwarding after the FPC restarts. [PR1581325](#)
- Certain fields in the GNMI extension header and `show network-agent statistics` command display incorrect values if the input subscription path contains the `:` character. [PR1581659](#)
- Packet might be lost during global repair of FRR. [PR1586122](#)
- The `RPD_KRT_KERNEL_BAD_ROUTE` error message might be generated in certain scenarios when the `rpdd` restarts or GRES when you enable NSR, which has no functional impact. [PR1586466](#)
- Removing SIB without switching it to the `Offline` mode might impact traffic. [PR1586820](#)

- Telemetry leaves used-power and allocated-power under the `/components` file do not display correct value. [PR1587184](#)
- On PTX10008 routers, the error message that gets generated when you issue the request `chassis cb slot 1 offline` command needs to be corrected before the node goes offline. [PR1589433](#)
- Duplicate Junos Telemetry Interface leaf `oper-status` tag for IFD index 16386 displays mismatched value. [PR1592468](#)
- The `I2cpd-agent` process might become unresponsive after starting the telemetry service. [PR1592473](#)
- After the Routing Engine switchover, the error message `JexprSlowCntrRead - Unable to get the plct Inst for pfeIdx: 255, User-type: OVFM_OFFCHIP_NEXTHOP_CNTR` gets generated. [PR1593079](#)
- The TCP connections to the telemetry server might become unresponsive in the `CLOSE_WAIT` state. [PR1593113](#)
- The BFD session for MPLS LSP goes down after enabling ultimate-hop-popping. [PR1594621](#)
- PTX10008 routers:: Inconsistent component name for FPC CPU. [PR1595109](#)
- On PTX10008 routers, the application error alarms gets generated and the trace-writer process generates core file due to defunct rcp zombie. [PR1595409](#)
- Layer 2 VPN stops forwarding when you change the interface encapsulation to VLAN circuit cross-connect (VLAN CCC) from ethernet- circuit cross-connect (Ethernet CCC) and back. [PR1595455](#)
- Some TCP sessions might not be established after you issue the request `system snapshot` command. [PR1595470](#)
- [Error]Jexpr: cannot find ifToken for counterType:12. [PR1597355](#)
- The `aftmand` process might generate core file on Junos OS Evolved platforms. [PR1597649](#)
- On PTX10016 routers, the Major Host # Ethernet Interface Link Down false alarm gets generated. [PR1597763](#)
- On PTX10001-36MR routers, there is inconsistency in the platform name that gets used in multiple places, version, and snmp mibs. [PR1597999](#)
- Master-only IP address in the old primary Routing Engine (new backup) and the device become inaccessible after the Routing Engine switchover. [PR1598173](#)
- On PTX10008 routers, the BFD sessions do not go down after adding the input or output filter to block the BFD IPv4 or IPv6 packets. [PR1599257](#)
- On PTX10008 routers, the FTC status LED and SIB power LED are unlit or off. [PR1600178](#)

- The config interface `ip remove` command does not work correctly. [PR1600932](#)
- On PTX10008 routers, the `set chassis redundancy routing-engine 1 master` command does not change the default Routing Engine election priority. [PR1601430](#)
- After you delete the old VLAN and then add new VLAN, the lag interface is not learnt by the static VLAN. [PR1601915](#)
- On PTX10008 routers, the `aftman` process generates core files at `jexpr_if_logical_l2d_alloc` while you power off or on all the Packet Forwarding Engines across all FPCs. [PR1602035](#)
- On PTX10003 routers, the IRB ping fails after you power off or on the underlying Packet Forwarding Engine for the aggregated Ethernet child member. [PR1602181](#)
- On PTX10003 routers, the GRE keepalive packet with recursion control bit set get dropped. [PR1602353](#)
- On PTX10008 routers, powering off the Packet Forwarding Engine generates the `Jexpr: deleteFdbEntry: Null` error messages. [PR1602670](#)
- The `show system errors fru detail` command does not display `reset-pfe` as the `cmerror` configured action. [PR1602726](#)
- The `evo-aftmand-bt` process generates the `[Error] IfStats:map entry not present for ifl:1039` error message. [PR1604334](#)
- The channel 0 IFDs does not come up after adding the correct speed configuration. [PR1604810](#)
- Remote aggregated Ethernet interface member failure (trough disable or laser-off) might cause high tail drop that results in a high traffic loss. [PR1604823](#)
- The host loopback wedge might be detected in the Packet Forwarding Engine when you delete the aggregated Ethernet interface bundle configuration. [PR1605599](#)
- On PTX10008 routers, the Fan Tray Controller removal/absence alarm gets generated. [PR1605987](#)
- Segment Routing License issue might occur when you use the default chained-composite-next-hop configuration. [PR1606377](#)
- On PTX10008 routers, around 500ms to 800ms of traffic might be lost with one of the aggregated Ethernet interface member links of p2mp LSP branches down. [PR1606839](#)
- Memory might leak on the `l2cpd` process when you perform certain LLDP operations. [PR1608699](#)
- On PTX10000 routers, defunct `rcp` processes increase that might cause the primary Routing Engine to reboot. [PR1608776](#)

- On PTX10008 routers, the `evo-aftmand-bt.fpc_x86_64` process generates core file at `jexpr_pile_malloc` with LSR core profile configuration. [PR1608999](#)
- High priority queue might not get the expected bandwidth on Junos OS Evolved platforms. [PR1609823](#)
- The `show pfe statistics traffic` command does not display the host bound traffic. [PR1611115](#)
- After PICD restarts, the interface goes into the `Down` state in the channelized 100G link. [PR1611379](#)
- The IS-IS session might not come up when the network type is p2p for IRB interface. [PR1612606](#)
- Some of the fabric links might go into the `Faulty` state after swapping the FPC LC1201 with LC1202. [PR1612624](#)
- Mitigate false wrap gets drops statistics when IFDs move into or out-of an aggregated Ethernet interface while IFD drops excess traffic. [PR1613889](#)
- On PTX10016 routers, SIBs and FPCs go into the `Active` or `Online` state twenty-two minutes after loading the Junos OS Evolved Release image 21.2R1-S1-202108130158.0-EVO. [PR1614489](#)
- Line cards might become unstable due to the continuous memory usage of the `evo-cda-bt` application. [PR1614952](#)
- Twenty-seven percent traffic loss appears at the 221B packet size in Junos OS Evolved Release 21.4 as compared to Junos OS Evolved Release 21.2R1. [PR1615524](#)
- On PTX10008 routers, after FPC becomes offline, minor `cm-errors` might occur for ZFI block on other FPCs. [PR1616179](#)
- Inconsistent error counts appears in the `show interfaces brief` and `show interfaces extensive` command. [PR1616765](#)
- The `aftmand` process generates core files at `RtIfaHandler::notifyCommand,EalIfaHandler::registryClientCommand ,EalIfaHandler::OnAdd (this=0x7f2ffe40e9a0 EalIfaHandler::instance()::handler, ifah=...)` at `../src/EalIfaHandler.cpp:222`. [PR1616909](#)
- While migration from Junos OS to Junos OS Evolved, you must delete the chassis redundancy failover or disable the chassis redundancy failover. [PR1617720](#)
- Multicast traffic to a mixed high-priority and low-priority OQs of a busy port might suffer drops of higher-priority multicast. [PR1618026](#)
- On PTX10001-36MR routers, issuing `request system snapshot` command does not capture the snapshot message in the `/etc/motd` file. [PR1618946](#)
- `InputIntf` is reported incorrectly for the MPLS-IPv4 and MPLS-IPv6 ingress sampling in case of Layer 3 VPN. [PR1619052](#)

- The hwdre process might crash when an FPC gets pulled out or some FPC power failure occurs. [PR1619102](#)
- The `/interfaces/interface/subinterfaces/subinterface/state/counters` are not exported during the initial synchronization for an on-change. [PR1620160](#)
- PIC becomes unresponsive in the Offline state when you issue the Offline command right after the transceiver plugin. [PR1621694](#)
- ZTP does not work properly on all the PTX Series routers if you use an EX Series switch as a DHCP server. [PR1621987](#)
- On PTX10008 routers, interface goes into the Down state while performing Custom Optics Profile validation for low power mode in the non-channelized mode. [PR1624228](#)
- On PTX10008 routers, the continuous information level `evo-aftmand-bt:Pfe:controller add for fru :controller modify for fru:fru power-on (block mode) for fryu:initiating online (block mode) for fru` syslog message might be generated. [PR1624375](#)
- The `show pfe route ip` command times out when the route table size is large. [PR1624629](#)
- Need to add the `show cda pipestats` command to more Junos OS Evolved Releases for serviceability. [PR1626687](#)
- Junos OS Evolved-based PTX platforms observes incomplete objects anomalies with scale beyond 16,000 logical interfaces in the system. [PR1573994](#)
- On PTX10008 routers, CB 1 goes in to the Fault Standby state after issuing the `request node power-off re1` command. [PR1581476](#)
- On PTX10008 routers, the EVPN-VXLAN shared tunnel commands must be removed. [PR1598142](#)
- GNMI Set RPC does not work with multiple operations. [PR1609436](#)
- The CDA-BT process generates a core file when turn FPC offline. [PR1615343](#)
- Device does not respond to traceroute while checking traceroute over VPN. [PR1615677](#)
- The Strict-Priority-Scheduler (SPS) might not work accurately across the port queues. [PR1616772](#)
- Limitation with fast-lookup-filter (FFT) usage in the ISF mode exist. [PR1616804](#)
- SNMP get for MIB value for `jnxRedundancyConfig` does not work as expected. [PR1621101](#)
- SNMP get for MID ID for `jnxRedundancySwitchoverReason` does not work as expected. [PR1621103](#)

Infrastructure

- Egress TCP RST might not correctly populate the DSCP field. [PR1612208](#)

Interfaces and Chassis

- The sensor of the Junos Telemetry Interface optics alarm data type changes from bool_val to str_val. [PR1580113](#)
- SIB might become unresponsive at the Offlining state after performing offline and online operations. [PR1591076](#)
- The 25G interfaces with FEC91 goes in the Down state on a few configurations. [PR1594740](#)
- On PTX10003 routers, the show platform object-info anomalies summary command times out. [PR1598337](#)
- The LACP system priority might take a value of 0 and cause an LACP interoperability issue. [PR1602724](#)
- A few links on the channelized interface goes in the Down state after oir_enable and oir_disable in 4X25G. [PR1606644](#)
- IRB VGA MAC IP is missed if you configure the IRB logical interface first with a mac-address. [PR1611559](#)

MPLS

- The rpd process generates core file in the backup Routing Engine at mirror_process_recvd_data_queue with the MLDP NSR configuration. [PR1594405](#)
- Static LDP P2MP might fail after NSR switchover. [PR1598344](#)
- SNMP traps does not get generated for the second trap group. [PR1623201](#)

Network Management and Monitoring

- The syslog archival transfer fails if you configure the archive site URL with an IPv6 address. [PR1603342](#)
- Incorrect IF-MIB::ifHCInUcastPkts and ifHCInBroadcastPkts statistics gets displayed. [PR1621606](#)

Routing Policy and Firewall Filters

- The dfwd-junos-relay process might generate core file during the Routing Engine switchover. [PR1597853](#)
- The configuration check fails if you configure more than eight FCs and enable CBF. [PR1600544](#)
- The dfwd process crashes when the no-decrement-ttl filter match condition and action is sent from the control plane to the Packet Forwarding Engine. [PR1602645](#)
- The firewall process might crash if you configure the fragment-offset out of the range (fragment-offset 1-9000000000000). [PR1605805](#)
- Filters in openconfig acl execute terms in the order of their definition and not based on sequence-ids. [PR1621620](#)

Routing Protocols

- The IPv4 static route might still forward traffic unexpectedly even when the static route configuration has already been deleted. [PR1599084](#)

User Interface and Configuration

- Updates to the system login configuration might not reflect after a commit. [PR1589858](#)
- The file copy command does not accept the HTTPS URIs. [PR1596881](#)
- Configuration transfer-on-commit does not work if you commit through netconf. [PR1602331](#)

Junos OS Evolved Release Notes for QFX5130-32CD, QFX5220, and QFX5700 Devices

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These release notes accompany Junos OS Evolved Release 21.4R1 for QFX Series switches. They describe new and changed features, limitations, and known and resolved problems in the hardware and software.

What's New

IN THIS SECTION

- [What's New in 21.4R1 | 46](#)

Learn about new features introduced in the Junos OS Evolved main and maintenance releases for QFX Series switches.

What's New in 21.4R1

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Device Security

- **Juniper Malware Removal Tool (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220)**—Starting in Junos OS Evolved Release 21.4R1, you can use the Juniper Malware Removal Tool (JMRT) to scan for and remove malware running on Junos OS Evolved devices. You can run two types of scans:
 - Quick scan—To scan each running program file
 - Integrity check—To check whether integrity mechanisms are enabled

[See [Juniper Malware Removal Tool](#) and [request system malware-scan](#).]

EVPN

- **EVPN Type 2 and Type 5 route coexistence (QFX5130-32CD, QFX5130-48C, and QFX5700)**—Starting in Junos OS Evolved Release 21.4R1, we support the coexistence of EVPN Type 2 and Type 5 routes in EVPN-VXLAN edge-routed bridging (ERB) overlay fabrics. This feature enables more efficient traffic flow and better usage of Packet Forwarding Engine resources. The switch applies a preference algorithm when you enable Type 5 routes. For any destinations for which the switch has no Type 5 route, the switch uses Type 2 routes by default. Otherwise, the switch gives preference to:
 - Type 2 routes for local ESI interfaces (locally learned routes)
 - Type 5 routes for all other destinations within the data center or across data centers

You can refine these preferences by configuring routing policies in the EVPN routing instance to control the Type 5 routes that the switch imports and exports.

[See [EVPN Type 2 and Type 5 Route Coexistence with EVPN-VXLAN](#).]

- **DHCP relay in EVPN-VXLAN (QFX5130-32CD)**—Starting in Junos OS Evolved Release 21.4R1, we support DHCP relay in an EVPN-VXLAN fabric. You can configure DHCP relay in centrally-routed and edge-routed bridging overlays. Support for DHCP relay includes DHCPv4 and DHCPv6. We introduced this feature in Junos OS Evolved Release 21.2R2..

[See [DHCP Relay Agent over EVPN-VXLAN](#).]

Juniper Extension Toolkit (JET)

- **Support for programming FTIs using JET APIs (PTX1000, PTX10002, PTX10008, PTX10016, QFX5100, and QFX10008)**—Starting in Junos OS Evolved Release 21.4R1, you can use the Interfaces Service API to configure flexible tunnel interfaces (FTIs) in Junos OS. You can change the attributes of the tunnel configurations for the unit under an existing FTI but cannot change the existing tunnel encapsulation type using the APIs. For the following families, you can configure only the listed attributes when you use Juniper Extension Toolkit (JET) APIs:

- INET and INET6: address and destination-udp-port
- MPLS and ISO: destination-udp-port

[See [Overview of JET APIs](#) and [Configure Flexible Tunnel Interfaces](#).]

Network Management and Monitoring

- **DHCP stateless relay MIB support (PTX10001-36MR, PTX10004, PTX10008, PTX10016, QFX5130, and QFX5220)**—Starting in Junos OS Evolved Release 21.4R1, you can use the Juniper Networks enterprise-specific DHCPv6 and DHCPv6 MIBs to retrieve statistics for DHCP stateless relay. We provide support only for the following MIB objects:

- jnxJdhcpRelayStatistics
- jnxJdhcpRelayIfcStats
- jnxJdhcpv6RelayStatistics
- jnxJdhcpv6RelayIfcStats

[See [Enterprise-Specific MIBs for Junos OS Evolved](#).]

- **SNMP MIB support for ICMP (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX1003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220, and QFX5700)**—Starting in Junos OS Evolved Release 21.4R1, we've added support for the following RFC4293 tables:

- icmpStatsTable—Generic system-wide ICMP counters
- icmpMsgStatsTable—System-wide per-version and per-message type ICMP counters

[See [Standard MIBs for Junos OS Evolved](#).]

Routing Policy and Firewall Filters

- **Support for profiles to improve the firewall filter scale (QFX5130-32CD, QFX5700, and QFX5220)**—Starting in Junos OS Evolved Release 21.4R1, you can apply firewall filters for inet and Ethernet-based switching using firewall filter profiles. You can use the profiles configuration statement at the [edit system packet-forwarding-options firewall] hierarchy level to configure firewall filter profiles. The firewall filter profiles are mapped to a subset of match conditions. This helps you to plan and apply firewall filter profiles to achieve maximum scale.

You can use the following CLI commands to display the profile information and the pipe that each physical interface is mapped to:

- show pfe filter hw profile-info

- `show pfe filter hw port-pipe-info`

[See [How to Increase the Scale of Firewall Filters Using Profiles.](#)]

Routing Protocols

- **Support for ICMP extension (QFX5100)**—Starting in Junos OS Evolved Release 21.4R1, for both numbered and unnumbered aggregated Ethernet interfaces, we've implemented RFC5837 to enable us to append additional fields to the following ICMP (IPv4 and IPv6) messages:
 - ICMPv4 Time Exceeded
 - ICMPv4 Destination Unreachable
 - ICMPv6 Time Exceeded
 - ICMPv6 Destination Unreachable

Use the `set system allow-icmp4-extension` command to enable ICMP extension.

[See [Configure ICMP Features.](#)]

Software Installation and Upgrade

- **Support for DHCPv6 on ZTP (QFX5130-32CD, QFX5220, and QFX5700)**—Starting in Junos OS Evolved Release 21.4R1, zero-touch provisioning (ZTP) supports the DHCPv6 client on the management interface. During the bootstrap process, the device first uses the DHCPv4 client to request for information regarding image and configuration file from the DHCP server. The device checks the DHCPv4 bindings sequentially. If there is a failure with one of the DHCPv4 bindings, the device continues to check for bindings until provisioning is successful. If there are no DHCPv4 bindings, however, the device checks for DHCPv6 bindings and follows the same process as for DHCPv4 until the device can be provisioned successfully. The DHCP server uses DHCPv6 options 59 and 17 and applicable sub-options to exchange ZTP-related information between itself and the DHCP client.

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

- **Support for outbound SSH service (PTX10001-36MR, PTX10003, PTX10004, PTX10008, QFX5130-32CD, QFX5220-32CD, and QFX5220-128C)**—Starting in Junos OS Evolved Release 21.4R1, we support outbound SSH service.

You can use the `restart service-deployment` command to restart the Service Deployment System (SDX) process.

[See [outbound-ssh.](#)]

Additional Features

We've extended support for the following features to these platforms.

- **ICMPv6 and ARP statistics support for Junos EVO platforms (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5700)**—The existing ARP and ICMPv6 statistics reports are enhanced to support the following statistics.
 - ARP
 - Proxy requests
 - Requests dropped on entry
 - Number of arp packets dropped as nexthop allocation failed
 - ICMPv6
 - Output histogram—unreach, echo request, echo reply, neighbor solicitation, neighbor advertisement, router solicitation, and router advertisement details
 - Input histogram—unreach, echo request, echo reply, neighbor solicitation, neighbor advertisement, router solicitation, and router advertisement details
 - messages with bad code fields, messages < minimum length, bad checksums, messages with bad length
 - message responses generated, messages with too many ND options, current public ND nexthops present
 - [See [show system statistics arp](#) and [show system statistics icmp6](#)]
- **IPsec support for OSPFv2 and OSPFv3 (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10008, PTX10016, QFX5130-48C, and QFX5220)**

[See [Overview of IPsec](#), [Configuring OSPF Authentication](#), and [Configuring IPsec Security Associations](#).]
- **Support for MIB accounting profiles (PTX10001-36MR, PTX10004, PTX10008, PTX10016, and QFX5220)**

[See [Accounting Profiles: An Alternative to SNMP Statistics](#).]
- **Support for resilient hashing on LAG groups (QFX5130-32CD and QFX5700)**

[See [Resilient Hashing on LAGs and ECMP groups](#).]
- **Support for 400GbE QSFP-DD DAC cables (QFX5700)**—Starting in Junos OS Evolved Release 21.4R1, QFX5700 switches support 400Gbps speed using QDD-400G-DAC-1M and QDD-400G-DAC-2P5M DAC cables.

[See [Hardware Compatibility Tool](#).]

- **Supported transceivers, optical interfaces, and DAC cables (ACX Series, PTX Series, and QFX Series)**
—Select your product in the [Hardware Compatibility Tool](#) to view supported transceivers, optical interfaces, and DAC cables for your platform or interface module. We update the HCT and provide the first supported release information when the optic becomes available.

What's Changed

IN THIS SECTION

- [What's Changed in Release 21.4R1 | 51](#)

Learn about what changed in this release for QFX Series switches.

What's Changed in Release 21.4R1

IN THIS SECTION

- [EVPN | 51](#)
- [Interfaces and Chassis | 52](#)
- [Network Management and Monitoring | 52](#)
- [Software Installation and Upgrade | 52](#)

EVPN

- **Community information no longer included in VRF routing table**—The QFX series switches will no longer include the inherited advertised route target communities, EVPN extended communities, or vxlan encapsulation communities for EVPN Type 2 and EVPN Type 5 routes when an IP host is added in the VRF routing table.
- **Output for show Ethernet switching flood extensive**—The output for show ethernet-switching flood extensive now displays the correct next-hop type for Virtual Ethernet and WAN mesh group in an

EVPN-VXLAN network as unilist. Previously, the output for show ethernet-switching flood extensive would misidentify the next-hop type as composite.

Interfaces and Chassis

- When configuring multiple flexible tunnel interface (FTI) tunnels, the source and destination address pair needs to be unique only among the FTI tunnels of the same tunnel encapsulation type. Prior to this PR, the source and destination address pair had to be unique among all the FTI tunnels regardless of the tunnel encapsulation type.

Network Management and Monitoring

- **SNMP support for MIB**—Operational command show snmp mib walk system now shows the latest software version and doesn't show the build date.

[See [show snmp mib](#).]

- **Change in behavior of SNMP MIB object ifAlias**—SNMP MIB object ifAlias now shows the configured interface alias. In earlier releases, ifAlias used to show configured interface description.
- **Support for disconnecting unresponsive NETCONF-over-SSH clients (ACX Series, PTX Series, and QFX Series)**—You can enable devices to automatically disconnect unresponsive NETCONF-over-SSH clients by configuring the client-alive-interval and client-alive-count-max statements at the [edit system services netconf ssh] hierarchy level. The client-alive-interval statement specifies the timeout interval in seconds, after which, if no data has been received from the client, the device requests a response. The client-alive-count-max statement specifies the threshold of missed client-alive responses that triggers the device to disconnect the client, thereby terminating the NETCONF session.

[See [ssh \(NETCONF\)](#).]

- **The configuration accepts only defined identity values for nodes of type identityref in YANG data models (ACX Series, PTX Series, and QFX Series)**—If you configure a statement that has type identityref in the corresponding YANG data model, the device accepts only defined identity values (as defined by an identity statement) as valid input. In earlier releases, the device also accepts values that are not defined identity values.

Software Installation and Upgrade

- **Series profile1 image deprecation**—Starting in Junos OS Evolved 21.4R1, we've deprecated the Series Profile1 software image (also referred to as the lean rpd profile image) for QFX5130 and QFX5220 series devices. All other software image packages continue to be available for those devices.

[See [Junos OS Evolved Installation Packages](#).]

Known Limitations

IN THIS SECTION

- [General Routing | 53](#)

Learn about known limitations in Junos OS Evolved Release 21.4R1 for QFX Series Switches.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

General Routing

- On QFX5700 platforms, the system reboots when faulty FEB is off-lined for recovery. [PR1578090](#)
- 2x200G(QSFP56-DD-2x200GBASE-CR4-CU) channel that is connected with the server through vendor connectX-6 NIC might take extra time for the link to come up. [PR1617676](#)
- On QFX5130-32CD, the inter-operation issue between QFX5130 with Mellanox NIC, RX drops found on Mellanox port when sending traffic over 3G rate. [PR1626410](#)

Open Issues

IN THIS SECTION

- [General Routing | 54](#)
- [Routing Policy and Firewall Filters | 54](#)

Learn about open issues in Junos OS Evolved Release 21.4R1 for QFX Series Switches.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

General Routing

- On QFX5700, auto-negotiation is not supported for 100G DAC interfaces. [PR1594135](#)
- On QFX5220-32CD, the interface goes down after setting invalid FEC on an interface with QSFP56-DD-4X100G-FR and QSFP56-DD-400GBASE-DR4. [PR1610085](#)

Routing Policy and Firewall Filters

- On QFX5700 when we issue `clear firewall all` command, the policer statistics are not cleared. User defined policer statistics are removed. [PR1581867](#)

Resolved Issues

IN THIS SECTION

- [Resolved Issues: 21.4R1 | 54](#)

Learn about the issues fixed in this release for QFX Series Switches.

For the most complete and latest information about known Junos OS Evolved defects, use the Juniper Networks online [Junos Problem Report Search](#) application.

Resolved Issues: 21.4R1

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- [User Interface and Configuration | 55](#)

General Routing

- If more than 512 OSPF neighbors are configured, all the OSPF routes might not be learned unless the MTU of the IRB interface is modified. [PR1570498](#)
- The interface might not learn mac-address if it is configured with vlan-id-list starting with VLAN id 1 and native-vlan-id. [PR1597013](#)
- Traffic loss might be observed when evo-pfemamd is restarted. [PR1608004](#)
- In QFX5700 FPC, QSFP port reset signal to be inverted in the software. [PR1608849](#)
- The egress traffic is dropped due to the egress queue buffer stuck on 400G interfaces. [PR1618147](#)
- Junos OS Evolved:JDI_FT_REGRESSION:ui:ui_change :: On performing request system snapshot, the snapshot message is not captured in /etc/motd file. [PR1618946](#)

Infrastructure

- The alarm **Host 0 Active Disk Usage Exceeded** might be generated due to large files which were already marked as deleted. [PR1601251](#)

User Interface and Configuration

- The file copy command is not accepting HTTPS URLs. [PR1596881](#)

Upgrade Your Junos OS Evolved Software

Products impacted: ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220-32CD, QFX5220-128C, QFX5700.

Follow these steps to upgrade your Junos OS Evolved software:

1. Using a Web browser, navigate to the All Junos Platforms software download URL on the Juniper Networks webpage: <https://www.juniper.net/support/downloads/>
2. In the Find a Product box, enter the Junos OS platform for the software that you want to download.
3. Select Junos OS Evolved from the OS drop-down list.
4. Select the relevant release number from the Version drop-down list.
5. In the **Install Package** section, select the software package for the release.

6. Log in to the Juniper Networks authentication system using the username (generally your e-mail address) and password supplied by a Juniper Networks representative.
7. Review and accept the End User License Agreement.
8. Download the software to a local host.
9. Copy the software to the device or to your internal software distribution site.
10. Install the new 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.

For more information about software installation and upgrade, see [Software Installation and Upgrade Overview](#). For more information about EOL releases and to review a list of EOL releases, see <https://support.juniper.net/support/eol/software/junosevo/>.

Licensing

In 2020, Juniper Networks introduced a new software licensing model. The Juniper Flex Program comprises a framework, a set of policies, and various tools that help unify and thereby simplify the multiple product-driven licensing and packaging approaches that Juniper Networks has developed over the past several years.

The major components of the framework are:

- A focus on customer segments (enterprise, service provider, and cloud) and use cases for Juniper Networks hardware and software products.
- The introduction of a common three-tiered model (standard, advanced, and premium) for all Juniper Networks software products.
- The introduction of subscription licenses and subscription portability for all Juniper Networks products, including Junos OS and Contrail.

For information about the list of supported products, see [Juniper Flex Program](#).

Finding More Information

- **Feature Explorer**—Juniper Networks Feature Explorer helps you to explore software feature information to find the right software release and product for your network.

<https://apps.juniper.net/feature-explorer/>

- **PR Search Tool**—Keep track of the latest and additional information about Junos OS open defects and issues resolved.

<https://prsearch.juniper.net/InfoCenter/index?page=prsearch>

- **Hardware Compatibility Tool**—Determine optical interfaces and transceivers supported across all platforms.

<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.

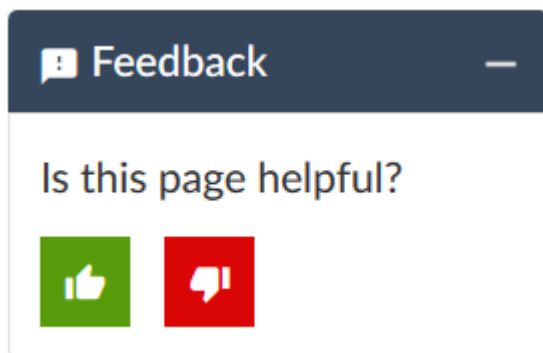
- **Juniper Networks Compliance Advisor**—Review regulatory compliance information about [Common Criteria](#), [FIPS](#), [Homologation](#), [RoHS2](#), and [USGv6](#).

<https://pathfinder.juniper.net/compliance/>

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- **Online feedback system**—Click TechLibrary Feedback, on the lower right of any page on the [Juniper Networks TechLibrary](#) site, and do one of the following:



- Click the thumbs-up icon if the information on the page was helpful to you.
- Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable)

Requesting Technical Support

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- [Self-Help Online Tools and Resources | 59](#)
- [Creating a Service Request with JTAC | 59](#)

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active Juniper Care or Partner Support Services support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <https://www.juniper.net/customers/support/>
- Search for known bugs: <https://prsearch.juniper.net/>
- 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/>

Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- 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

16 December 2021—Revision 1, Junos OS Release 21.4R1 for the ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10004, PTX10008, QFX5130-32CD, QFX5220, and QFX5700 Devices.

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