

Release Notes

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Junos[®] OS Evolved Release 22.1R1

SUPPORTED PLATFORMS

- ACX7100-32C, ACX7100-48L, ACX7509, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220, and QFX5700

KEY FEATURES

- Refer to Key Features in Junos OS Evolved Release 22.1R1 to quickly learn about the most important Junos OS Evolved features and how you can deploy them in your network.

SOFTWARE HIGHLIGHTS

- Support for 400G ZR+ DWDM optics (PTX10001-36MR)
- Packet Forwarding Engine pipeline sensors (PTX10001-36MR, PTX10008, and PTX10016)
- Support for SDN-based network interconnects (PTX10004, PTX10008, and PTX10016)
- Synchronous Ethernet with ESMC support (PTX10001-36MR)

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 22.1R1.

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](#).

Key Features in Junos OS Evolved Release 22.1

Start here to learn about the key features in Junos OS Evolved Release 22.1. For more information about a feature, click the link in the feature description.

- **Packet Forwarding Engine pipeline sensors (PTX10001-36MR, PTX10008, and PTX10016)**—Junos OS Evolved Release 22.1R1 introduces support for pipeline sensors with JTI. The pipeline sensors provide telemetry device monitoring by delivering NPU and ASIC counters from a device to an outside collector. The four packet and drop counter categories are interface, lookup, queueing, and host interface. Subscribe to the resource path `/components/component/integrated-circuit/pipeline-counters` to export all pipeline counters, or use `/components/component/integrated-circuit/pipeline-counters/packet/` or `/components/component/integrated-circuit/pipeline-counters/drop/` to provide packet-only or drop-only counters.

The pipeline sensors support both zero-suppression and initial sync. The zero-suppression feature streams only non-zero values. The initial sync (init-sync) feature streams all values once after the initial subscription. This one-time-only bucket of values includes zero values even if zero-suppression is enabled.

You can use native (UDP) and Juniper proprietary gRPC and gNMI to stream counters.

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

- **Synchronous Ethernet with ESMC support (PTX10001-36MR)**

[See [Synchronous Ethernet Overview](#) and [Ethernet Synchronization Message Channel \(ESMC\)](#).]

- **Support for 400G ZR-M DWDM optics (PTX10001-36MR)**—

Starting in Junos OS Evolved Release 22.1R1, we support 400G ZR-M DWDM optics. 400G ZR-M is a new variant optics that functions similar to the existing 400G ZR. 400G ZR-M enables flat architecture, simple, and Point to Point (PtP) DWDM system. We support the following features as part of 400G ZR-M:

- Support for 6.25, 75, 100 grid spacing.
- Support for optical loopbacks. To enable optics loopback, use the existing loopback statement at the `[edit interfaces optics-options]` hierarchy level.
- Support for performance monitoring and TCA. TCAs provide the management system an early indication of the deteriorating health of an optical network connection when the performance parameter that you monitor crosses a certain threshold. You can view the current and historical performance monitoring metrics which are accumulated into 15-minute and 1-day interval bins by using the `show interfaces transport pm` command. You can thus manage optical transport link efficiently.

[See [optics-options](#), [show chassis hardware](#), [show interfaces](#), [show interfaces diagnostics optics](#), [show chassis pic](#), and [show interfaces transport pm](#) .]

- **Support for SDN-based network interconnects (PTX10004, PTX10008, PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, you can configure certain PTX device interfaces to pass traffic towards an SDN controller. You do this using firewall filters to match and redirect packets defined at the `[edit services inline-monitoring instance name controller]` hierarchy level. Supported match criteria includes IPv4, IPv6, and family **any** (destination), VLAN ID, and certain traceroute redirect packets.

[See [Controller](#).]

Junos OS Evolved Release Notes for ACX7100-32C, ACX7100-48L, and ACX7509 Devices

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These release notes accompany Junos OS Evolved Release 22.1R1 for ACX7100-32C, ACX7100-48L, and ACX7509 routers. They describe new features, limitations, and known 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 22.1R1

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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 22.1R1, 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.

Class of Service

- **DSCP propagation and default CoS support for EVPN VXLAN (ACX7100-32C and ACX7100-48L)**—Starting in Junos OS Evolved release 22.1R1, use our new command set `system packet-forwarding-options no-ip-tos-rewrite` to allow DSCP propagation for VXLAN traffic. When you configure or delete DSCP propagation, the `evo-pfem` process restarts.

[See [Configuring CoS on ACX Series Routers](#) and [Applying DSCP and DSCP IPv6 Classifiers on ACX Series Routers](#).]

EVPN

- **Enhanced platform, routing, and switching support for EVPN-VPWS flexible cross-connect (FXC) forwarding (ACX7509)**—Starting in Junos OS Evolved Release 22.1R1, forwarding support for EVPN-VPWS/FXC leverages the existing platform-dependent infrastructure of the EVO routing engine and the Environment Abstraction Layer (EAL), as well as all EVO-PFEMAN infra process layers. Forwarding features are enabled on ACX7509 routers using infrastructure and kernel services provided by EVO.

The following forwarding feature categories are supported:

- Layer 2 Bridging
- Layer 3 Routing (IPv4 | IPv6)
- MPLS VPNs
- VPLS
- QoS
- Firewall
- OAM (CFM, BFD)
- DHCP/Services
- Statistics
- Multicast support
- VRRP

[See [Overview of Flexible Cross-Connect Support on VPWS with EVPN](#).]

- **EVPN E-LAN Active-Active Multihoming with EVPN Aliasing Support for ESI LAG (ACX7100-32C, ACX7100-48L)**—Starting in Junos OS Evolved Release 22.1, BGP-signalled EVPN services are supported over a MPLS WAN network with active-active multihoming redundancy and EVPN aliasing support for Ethernet segment interface (ESI) link aggregation group (LAG) implementations.

Configure EVPN for multihomed CE devices in the active-active redundancy mode, so the Layer 2 unicast traffic is load-balanced (aliased) across all multihomed links on and toward the CE device. Type 1 AD/ESI and AD/EVI routes are supported where the designated forwarder (DF) PE is responsible for forwarding BUM traffic towards multihomed CE devices. In general, Unicast traffic is received on any multihoming PEs because the CE is connected via LAG, and Unicast traffic also flows from the core to the multihomed CE IFL logical interfaces. BUM traffic flows from the multihomed CE to the core. If a packet is flooded in one of the multihoming PEs, regular BUM forwarding will happen with outgoing packets carrying IM labels. Note that the ESI value must always be unique across all IFDs and IFLs.

EVPN aliasing provides the ability of a remote device to load balance Layer 2 Unicast traffic. It allows a device to quickly recover when a link to a multihomed PE device fails. EVPN aliasing enables load balancing that depends on a Hash key configuration using:

```
set forwarding-options hash-key <hash key parameters>
```

Both overlay and underlay load balancing is supported.

[See

- [EVPN Multihoming Overview](#).
- [Example: Configuring EVPN Active-Active Multihoming](#).
- [Using the evpn-aliasing-optimize command](#).
- [EVPN Features in EVPNs using EVPN LAG](#).]
- **EVPN E-LAN Single homing support (ACX7509)**—Starting in Junos OS Evolved Release 22.1R1, forwarding features are supported for EVPN-MPLS vlan-based and bundle-based services on single-homing Ethernet - Local Area Networks (E-LANs).

[See [Single-Homed EVPN Example](#).]

- **Support for EVPN-MPLS service (ACX7100-32C, ACX7100-48L, and ACX7509)**—Starting in Junos OS Evolved Release 22.1R1, you can configure EVPN-MPLS services using MAC-VRF routing instance provisioning. No new CLI are introduced with this release.

[See [EVPN Overview](#).]

- **Support for EVPN-VPWS MultiHoming All-Active for Segment Routing over MPLS (ACX7100-32C, ACX7100-48L)**—Starting in Junos OS Evolved Release 22.1R1, EVPN-VPWS multihoming for segment routing over MPLS consists of two variants: all-active and single-active models. All-active

instances share traffic to each multihomed provider edge (PE). The single-active instances are cold-standby acting as single-homed models where the routing protocol daemon (RPD) is aware of the backup path. If the primary goes down, RPD performs a global repair and updates the packet forwarding engine (PFE) with the new path. Multiple multihomed neighbors are supported, up to 512 instances. Note that asynchronous notification is not supported in this release.

[See [Overview of VPWS with EVPN Signaling Mechanisms](#).]

- **Support for all-active multihoming redundancy in both Ethernet VPN–virtual private wire service (EVPN-VPWS) and EVPN-VPWS with flexible cross-connect (ACX7100-32C and ACX7100-48L)**—Starting in Junos OS Evolved Release 22.1R1, you can configure ACX7100-32C and ACX7100-48L devices in both EVPN-VPWS networks with flexible cross-connect (FXC) or legacy EVPN-VPWS (non-FXC) networks to support all-active multihoming redundancy.

[See [Overview of Flexible Cross-Connect Support on VPWS with EVPN](#).]

Interfaces

- **Multichassis link aggregation groups (MC-LAGs) (ACX7100-32C and ACX7100-48L)**—Starting in Junos OS Evolved Release 22.1R1, the following features are available on MC-LAGs:
 - Layer 2 bridging for active-active and active-standby modes
 - Layer 2 unicast without IGMP snooping
 - Layer 3 unicast without IGMP snooping

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

Junos Telemetry Interface

- **Forwarding Information Base (FIB) sensor streaming support (ACX7100-32C, ACX7100-48L, and ACX7509)**—Junos OS Evolved Release 22.1R1 supports FIB statistics using Junos telemetry interface (JTI) and Juniper proprietary gRPC. The FIB on the Packet Forwarding Engine, also referred to as a forwarding table, maintains the complete set of active IPv4 (inet) and IPv6 (inet6) routes. Streaming statistics are sent to an outside collector.

This feature supports the OpenConfig model oc-aft-yang model.

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

- **Layer 3 routing and protocol statistics (ACX7100-32C, ACX7100-48L, and ACX7509)**—Starting in Junos OS Evolved Release 22.1R1, JTI provides Layer 3 support using Juniper proprietary gRPC. Statistics are streamed for IPv4, IPv6, BGP, IS-IS, and ARP protocols.

Starting in Junos OS Evolved Release 22.1R1, JTI provides Layer 3 support using gRPC services. It also provides routing protocol IPv4, IPv6, BGP, IS-IS support and ARP streaming sensor support using gRPC services.

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

- **Packet Forwarding Engine firewall filter statistics (ACX7100-32C and ACX7100-48L)**—Starting in Junos OS Evolved Release 22.1R1, JTI provides firewall filter stats. To generate periodic streaming of statistics, use the resource path `/junos/system/linecard/firewall/` in a Juniper proprietary gRPC and gNMI subscription.

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

- **System, CPU, and memory statistics (ACX7100-32C, PTX10001-36MR, PTX10003, PTX10004, PTX10008 and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, JTI provides periodic streaming of system statistics, CPU statistics, and memory-related parameters. Statistics support the health-monitoring application. This feature supports the data model `openconfig-system.yang` version 0.10.0. It is supported using Juniper proprietary gRPC and gNMI supported.

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

MPLS

- **Supports MD5 authentication algorithm for subnet level configuration (ACX Series, PTX Series, and QFX Series)**—Starting from Junos OS Evolved 22.1R1 Release, MD5 authentication algorithm for subnet level key configuration is supported for all Junos OS Evolved platforms. Whereas, `aes-128-cmac-96` and `hmac-sha-1-96` algorithms are not supported for subnet level key configuration in Junos OS Evolved Releases.

[See [session-group](#) and [Configuring the TCP MD5 Signature for LDP Sessions](#).]

Multicast

- **Support for BGP MVPN (ACX7100-32C, ACX7100-48L)**—Starting in Junos OS Evolved Release 22.1R1, certain ACX series routers support BGP/MPLS MVPN (also known as “next generation,” or “NG,” MVPN) running on multipoint LDP (MLDP P2MP) provider tunnels, where BGP MVPN is the intra-AS and PIM-SM/SSM is the data plane. The ACX can act as the Rendezvous Point (RP) and First-Hop Router (FHR). The implementation does not include BUD node (where the ACX functions as both an egress and transit device). IPv6 traffic on the CE side is supported.

[See [ACX Support for BGP MVPN](#).]

Routing Policy and Firewall Filters

- **Support for firewall filters on EVPN interfaces (ACX7509)**—Starting in Junos OS Evolved Release 22.1R1, you can configure firewall filters for packets traversing the Ethernet EVPN interface for ACX7509 devices.

[See [Guidelines for Applying Standard Firewall Filters.](#)]

Software Installation and Upgrade

- **Base operating system upgrade (ACX Series, PTX Series, and QFX Series)**—Starting in Junos OS Evolved Release 22.1R1, Junos OS Evolved uses the Wind River Linux LTS 19 base operating system. This upgrade provides improved security and better performance. Prior to this release, Junos OS Evolved used the Wind River Linux 9 base operating system.
- **OpenSSL version upgrade (ACX Series, PTX Series, and QFX Series)**—Starting in Junos OS Evolved 22.1R1, we've upgraded the OpenSSL version 1.1.1 to OpenSSL version 3.0.0 with Transport Layer Security (TLS) version 1.3 protocols. The upgraded OpenSSL version 3.0.0 with TLS protocol version 1.3 provides improved security and better performance.

Additional Features

- **Configure the ephemeral database using the NETCONF and Junos XML protocols (ACX7100-32C, ACX7100-48L, ACX7509, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, and QFX5220)**

[See [Understanding the Ephemeral Configuration Database.](#)]

- **EVPN-VXLAN additional features support (ACX7100)**
 - VLAN-based and VLAN bundle MAC-VRF service types (only VLAN-aware bundle service type was supported previously). (See [MAC-VRF Routing Instance Type Overview.](#))
 - Spine role with CRB overlays.

NOTE: We don't support overlapping VLANs between different virtual routing and forwarding (VRF) instances.

- BPDU protection in EVPN-VXLAN. (See [Understanding BPDU Protection for EVPN-VXLAN.](#))
- Preference based DF election. (See [Designated Forwarder Election.](#))
- EVPN BGP policy options support for control plane.

- Service provider style interface configuration with VXLAN, including:
 - Encapsulation types ethernet-bridge, extended-vlan-bridge, and flexible-ethernet-services. (See [encapsulation](#).)
 - Flexible VLAN tagging for single- and dual-tagged logical interfaces on the same port.
 - Q-in-Q. (See [Examples: Tunneling Q-in-Q Traffic in an EVPN-VXLAN Overlay Network](#).)
 (See [Understanding Flexible Ethernet Services Support With EVPN-VXLAN](#).)
- Extensions to enterprise style interface configuration support with VXLAN, including:
 - Trunk interfaces with flexible Ethernet services and flexible VLAN tagging.
 - Multiple trunk interfaces on the same port.
 (See [Understanding Flexible Ethernet Services Support with EVPN-VXLAN](#).)
- Layer 2 (L2) and Layer 3 (L3) logical interfaces on the same port, with L2 logical interfaces as part of the VXLAN VLAN or tenant VLANs.

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

- **Firewall filter actions** (ACX7100-32C, ACX7100-48L, and ACX7509)—Supports next-ip and next-ip6 to configure filter-based forwarding or policy-based forwarding.

[See [Filter-Based Forwarding Overview](#).]

- **PFE Restart Support** (MX240, MX480, and MX960 with MPC7, MPC8, and MPC9 and MX100008, MX100016 with LC2101)
- **PFE Reset Support** (MX100008, MX100016 with LC2101) using command set chassis error severity threshold count action reset-pfe, for errors including ASIC errors. [See [No Link Titleerror and No Link Title](#).]
- **IEEE Standard 802.3ah and 802.1ag for OAM CFM DOWN and UP maintenance association end points (MEPs) over VPLS** (ACX7100-32C, ACX7100-48L, and ACX7509)

[See [IEEE 802.3ah OAM Link-Fault Management Overview](#) and [IEEE 802.1ag OAM Connectivity Fault Management Overview](#).]

- **IEEE Standard 802.3ah and 802.1ag for OAM CFM UP maintenance association end points (MEPs) over EVPN** (ACX7100-32C, ACX7100-48L, and ACX7509)

[See [IEEE 802.3ah OAM Link-Fault Management Overview](#) and [IEEE 802.1ag OAM Connectivity Fault Management Overview](#).]

- **PCEP session over IPv6** (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)

[See [destination-ipv6-address](#) and [local-ipv6-address](#).]

- **Persistent storage of DHCP relay agent bindings in EVPN-VXLAN fabrics** (ACX7100-32C and ACX7100-48L)

[See [Maintaining DHCP Subscribers During Interface Delete Events](#).]

- **Port mirroring with analyzer** (ACX7100-32C, ACX7100-48L, and ACX7509)—Supports port mirroring on both ingress and egress ports to mirror a copy of a packet to a configured destination with analyzers.

[See [Port Mirroring and Analyzers](#).]

- **Resiliency support for RCB, FEB, and line card JNP-FPC-20Y** (ACX7509)

[See ACX Hardware Components (upcoming link) and [Port Speed](#).]

- **SPRING support for SR-TE** (ACX7100-32C and ACX7100-48L):

- Segment routing policy to steer labeled or IP traffic at ingress routers.
- Segment routing paths for a non-colored static label-switched path (LSP).
- Color-based traffic steering of Layer 2 and Layer 3 VPN services.
- SR policy-based dynamic tunnel module triggered SR-TE.
- Indirect next hop and composite next hop modes.

[See [Segment Routing Traffic Engineering at BGP Ingress Peer Overview](#).]

- **Support for classification and rewrites for EVPN interfaces** (ACX7509)

[See [EVPN Overview](#).]

- **Support for flexible algorithm in OSPF and IS-IS for segment routing traffic engineering** (ACX7100-32C and ACX7100-48L)

[See [Understanding OSPF Flexible Algorithm for Segment Routing](#) and [How to Configure Flexible Algorithms in IS-IS for Segment Routing Traffic Engineering](#).]

- **Support for Real-time Performance Monitoring (RPM) and Two-Way Active Measurement Protocol (TWAMP)** (ACX7509)

[See [Understand Two-Way Active Measurement Protocol](#) and [Understanding Using Probes for Real-Time Performance Monitoring](#).]

- **Support for redundant pseudowire Layer 2 circuits** (ACX7100-32C and ACX7100-48L)—Multichassis Link Aggregation Group (MC-LAG) is not supported with redundant pseudowire Layer 2 circuits.

[See [Redundant Pseudowires for Layer 2 Circuits and VPLS](#).]

- **Support for redundant pseudowires for virtual private LAN service** (ACX7100-32C, ACX7100-48L, and ACX7509)—Supports VPLS with LDP in hot-standby mode, cold-standby mode, and without BFD or CFM triggers.

[See [Redundant Pseudowires for Layer 2 Circuits and VPLS](#).]

- **Supported transceivers, optical interfaces, and DAC cables** (ACX 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.

- **Zero-touch provisioning (ZTP) with IPv6 support on management ports** (ACX7100-32C and ACX7100-48L)

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

What's Changed

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

What's Changed in Release 22.1R1

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Network Management and Monitoring

- **Junos XML protocol Perl modules deprecated (ACX Series, PTX Series, and QFX Series)**—We no longer provide the Junos XML protocol Perl client for download. To use Perl to manage Junos devices, use the NETCONF Perl library instead.

[See [Understanding the NETCONF Perl Client and Sample Scripts.](#)]

Known Limitations

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Learn about known limitations in Junos OS Evolved Release 22.1R1 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

- When you enable PTP, port 31 of the ACX7100-32C router gets configured to 1G. The Packet Forwarding Engine chip from the vendor supports only 10G. Hence, the speed gets converted from 10G to 1G on the external PHY. However, there is one limitation. It supports only frame size to 2000 bytes and jumbo frame cannot be supported on port 31 when you enable the PTP mode. [PR1593015](#)
- In case of scaled scenario with route table scale reaching upto their full limit(close to 1M), few triggers which reprograms the routing table might result in route entries being missed in the hardware. This happens in worst-case scenarios of prefix distribution. In real-time scenario, this issue must not occur and the internet route scales around 800,000, which should hold good. [PR1604034](#)
- 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, and 5. 0.12313 HZ. [PR1608866](#)
- Ingress replication is default for multicast. Per Packet Forwarding Engine, it can replicate up to 2.4T, which is the chip capacity. Inter-Packet Forwarding Engine replication is limited to 2.1T due to fabric

bandwidth limitations. Hence with ingress replication, it is not possible to achieve total egress traffic across ports more than 2.1T. Based on BCM, there is no improvement possible. For ingress-egress recycle mode, there is an ingress bandwidth limitation of 95G. But, full throughput of 4.2T is achievable with more egress ports. [PR1629280](#)

- Maximum supported of logical child interface is 16,000. Each local XC needs 2 logical child interfaces that achieves 8000 scale. [PR1636947](#)
- In some corner cases, traffic does not get scheduled equally between the strict priority queues. Priority queue gets configured, completely utilizes the bandwidth, remaining queues are starved, and the traffic completely drops on those queues. In this state, if we configure a second strict high priority queue traffic does not get scheduled equally between the strict priority queues. This is hardware specific Q2C issue. [PR1577035](#)
- Ping and traceroute works with reply mode as ip-udp (applicable to other Junos OS Evolved ACX series). Other reply mode (application-level-control-channel) works when we support BFD over VCCV. For ping, the default mode for MSPW Echo reply is application-level-control-channel. Hence, MSPW L2VPN ping needs reply-mode as ip-udp for the ping to work, as BFD over VCCV is not supported. For traceroute, the default mode is application-level-control-channel. Hence, MSPW L2VPN traceroute needs reply-mode as ip-udp for the traceroute to work, as BFD over VCCV is not supported. [PR1642026](#)
- CCM transmission keeps occurring (for the Up MEP aggregated Ethernet interface case) during FPC restart, as the aggregated Ethernet interface does not get deleted during the FPC restart. The session information already programmed in the hardware does not get deleted. During the FPC restart case, the CCM transmission keeps occurring. Due to this reason, sessions are up on the peer. Whereas in case of physical interface, the sessions get deleted and added back during FPC restart. As a result, the behavior remains different in the physical interface compared to the aggregated Ethernet interface for UP MEP case. [PR1627369](#)
- The ACX platform performs hardware time stamping but the peer device (in this case MX routers) performs software time stamping, which takes more time resulting into high delays. This issue occurs on all the cases where the peer setup performs software time stamping. [PR1599777](#)
- The `clear mpls lsp` operation is a destructive operation where it wipes off all the existing routes and nexthops in the system, and does a fresh reinstallation. The 10 seconds delay in the traffic restoration for 16,000 Layer 3 VPN routes might be attributed to programming delay in the hardware units combined with software model and the CPU capacity. [PR1614413](#)

Open Issues

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Learn about open issues in Junos OS Release 22.1R1 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

- There are some RPC calls, which throw error when there is no handler. There is no impact in the traces and does not have any functionality impact. [PR1589410](#)
- The timingd application cannot be successfully restarted on ACX7100-48L:ACX7100-32C with G.8275.1 profile configuration. If there are PTP streams configured and there is a timingd restart due to timingd core file or requested application restart, the PTP streams might not be restored correctly, and/or changes to the PTP stream configuration after the restart might result in PTP streams that do not forward data packets correctly. It is very likely that a restart always affect the streams.

[PR1597120](#)
- With IGMPv3 reports received at a higher rate more than 1600 pps, packets drop due to control plane rate limit. Hence, it is not possible to form 256,000 IGMP groups. You must change the DDoS configuration to reach 256,000 IGMP groups. [PR1599998](#)
- Given the higher number of internal ports, two vendor's Q2C ASICs and eight FPCs supporting 20 ports (maximum), 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 consuming the system. [PR1603899](#)
- PTP to PTP noise transfer fails for frequencies 1. 0.03125 HZ and 2. 0.123125 HZ. [PR1608786](#)

- syncE to PTP and syncE to 1pps transient response marginally fails. This happens when the servo gets the initial 100ns jump in one measurement window and the next 100ns in the next measurement window adjusting less initially. [PR1608934](#)
- PTP to PTP noise transfer fails for frequency 0.03125 HZ. [PR1611838](#)
- 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, and 5. 0.12313 HZ. [PR1611911](#)
- MAC statistics for lacp on lag interfaces do not display the multicast packets. As a workaround, instead of querying the MAC statistics under the aggregated Ethernet interface, query for the actual physical interface created under the aggregated Ethernet interface. [PR1612105](#)
- On a FTC FRU hot removal, the following error message might be generated and there might be a kernel call stack trace dump in journal, which can be ignored:

```
FAN -Error: value = 0xffff880e ret = 0xffffffffb
```

[PR1613389](#)

- Journalctl logs do not print for evo-pfemamd and packetio-brcm. You must use journalctl -t appname instead of journalctl -u appname. [PR1621009](#)
- No details of auto negotiation settings are available on 1GE interfaces. [PR1621991](#)
- DHCP transit unicast packets get dropped if you do not configure the interface in the DHCP relay stanza. [PR1626759](#)
- On ACX7100-32C router, the 400G-ZR optic transceiver firmware upgrade failure occurs. This is a generic issue faced across all single RU platforms supporting QDD-400G-ZR. [PR1626882](#)
- After the picd or rpdagent application restarts multiple object-info anomalies for the evo-pfemamd process, the following anomalies get generated:

```
Type : net::juniper::rtnh::Route Type : net::juniper::rtnh::NHOpaqueTlv Type :
net::juniper::rtnh::NextHop Type : net::juniper::rtnh::Unilist Type :
net::juniper::rtnh::BfdSessionId
```

[PR1628843](#)

- While sending traffic from both cores/units, all (16) VOQs/connectors are asking credits from same port. As a result credits are distributed as per weight ratio and flows asking for higher credits get higher bandwidth than others. [PR1611028](#)

- In certain segment routing topologies having routers with varying CPU capabilities/load, higher convergence time might occur for a switchover event due to micro-loops. This is a known behavior when the one node converges faster than the neighboring node. The best solution for this is to fine tune the network topology using the `micro-loop avoidance` statement. [PR1621263](#)
- With combination of triggers like `restart rpd` and `fpc`, route object leaks in the Packet Forwarding Engine. [PR1641947](#)
- On ACX7509, PCI device misses alarm raises for all FPCs from the backup Routing Engine. There are no functional impact. [PR1627348](#)
- If the system gets fully scaled across features and firewall also gets scaled. The CPU consumption might be more for a small window of around 5 seconds after every 18 seconds. The `evo-pfemand` process might become busy collecting the scaled firewall stats for that 5 seconds window and any other applications like `pfe-cli` might fail to execute commands. [PR1629342](#)
- On ACX7100-32C and ACX7509 routers, 4x100g channels do not come up after multiple iterations `Tx lase disabled` alarm on. [PR1631193](#)
- In the Layer 2 performance test, you cannot achieve 100 percent line rate across the mesh fabric between the Q2C s for some of the packet sizes. Using 42 and 100G ports, expectation was 4.2Tbps. However, achieving 4.17T is not possible instead of 4.2T. This issue occurs for some specific packet sizes after 352 bytes and before 406 bytes. Broadcom already clarified that for some of the packet sizes, achieving 4.2T is not possible because of inefficiency of packing into cells. [PR1631948](#)
- In a working and non-working logs, `l2ld` index is different for `vrrp` group number 187. This is the same group for which packet gets dropped out of 400 groups. Other groups works as expected. There is some fix which went between working and NKWR related to `l2ld` which has exposed VRRP issue. Both VRRP MAC and interface MAC gets stored in `SLU my_mac_hash` table. For finding hash index for `vrrp` MAC, use `l2ld`, protocol type and `vrrp` group number as a key. In a non-working scenario, there is a collision between interface MAC and `vrrp` MAC on same hash index. Ideally hash movement should have happened to address collision but somehow it is not properly done. [PR1633986](#)

Interfaces and Chassis

- Due to software design limitation, support is available for only 64 member links in one aggregated Ethernet interface. From ASIC, there is no limitation. [PR1627951](#)

Routing Protocols

- On ACX7509 routers, IS-IS, LPD, and BFD protocols flaps during graceful switchover while testing ldp oam. [PR1638882](#)

User Interface and Configuration

- On ACX7100-32C routers, traffic does not flow after deleting or adding the VLAN configuration with load override. [PR1647853](#)

Resolved Issues: 22.1R1

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General Routing

- Filter with forwarding-class and destination-class combined might not work. [PR1595788](#)
- Traffic loss might occur when you restart the evo-pfemamd process. [PR1608004](#)
- On ACX7100-32C and ACX7100-48L, the `show system firmware` command sometimes might display the value of the `show Current Firmware version` output for FPC 0 as blank. [PR1618949](#)
- You must use the Linux command to remove the PCIe device that causes connection to become non-responsive. [PR1619368](#)
- When the fan tray X fails, an alarm gets created and the cleared while rebooting. [PR1633353](#)
- On ACX7509 routers, the picd process generates core file when you restart FPC with 700,000 scaled MAC. [PR1602352](#)

Infrastructure

- In certain circumstances, the journalctl process might be flooded with the No TTP_TLV_VRF message in the log. [PR1610313](#)
- The lookups command might not work. [PR1608401](#)

User Interface and Configuration

- The core files can not be deleted using the file `delete /var/core/*/vmcore` command. [PR1624562](#)

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 22.1R1 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.

What's New

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

What's New in 22.1R1

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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 22.1R1, 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.

Authentication and Access Control

- **Support for Keychain Mechanism for BGP and LDP Routing Protocols (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, the PTX Series routers support non-stop routing (NSR) for TCP keychain authenticated sessions with faster initial keychain scale commit and subsequent keychain config changes. This allows for a smooth transition during switchover from backup routing engine (RE).

[See [Authentication for Routing Protocols](#).]

EVPN

- **EVPN-MPLS support (PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, full support for EVPN-MPLS is now available on PTX 10016.

[See [EVPN-MPLS Overview](#).]

- **Flood policer support for EVPN VXLAN (PTX10001-36MR, PTX10004, PTX10008, PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, you can configure flood policers on supported PTX devices to prevent broadcast, unknown unicast, and multicast (BUM) traffic from flooding the network.

[See [Configuring Policers to Control Traffic Rates](#).]

High Availability

- **Support for runtime fabric OAM (PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, the runtime fabric Operation, Administration, and Maintenance (OAM) periodically checks fabric connectivity and helps detect and report failures in fabric planes during system runtime.

[See [Error Handling by Fabric OAM](#).]

Interfaces

- **Support for 400G ZR-M DWDM optics (PTX10001-36MR)**—

Starting in Junos OS Evolved Release 22.1R1, we support 400G ZR-M DWDM optics. 400G ZR-M is a new variant optics that functions similar to the existing 400G ZR. 400G ZR-M enables flat architecture, simple, and Point to Point (PtP) DWDM system. We support the following features as part of 400G ZR-M:

- Support for 6.25, 75, 100 grid spacing.
- Support for optical loopbacks. To enable optics loopback, use the existing loopback statement at the [edit interfaces optics-options] hierarchy level.
- Support for performance monitoring and TCA. TCAs provide the management system an early indication of the deteriorating health of an optical network connection when the performance parameter that you monitor crosses a certain threshold. You can view the current and historical performance monitoring metrics which are accumulated into 15-minute and 1-day interval bins by using the show interfaces transport pm command. You can thus manage optical transport link efficiently.

[See [optics-options](#), [show chassis hardware](#), [show interfaces](#), [show interfaces diagnostics optics](#), [show chassis pic](#), and [show interfaces transport pm](#) .]

Junos Telemetry Interface

- **Consolidated (atomic) statistics delivery for next-hop groups and conditional next-hop groups in JTI (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, Junos telemetry interface (JTI) supports consolidated (atomic) data. Statistics for next-hop groups and conditional next-hop groups will be delivered in a single "atomic" protocol data unit (PDU) instead of across multiple PDUs.

[See [Telemetry Sensor Explorer](#) and [gRPC Services for Junos Telemetry Interface](#).]

- **Enhanced chassis statistics for JTI (PTX10001-36MR, PTX10003, PTX10004, and PTX10008)**—Starting in Junos OS Evolved Release 22.1R1, JTI supports streaming and ON_CHANGE platform statistics per OpenConfig module openconfig-platform.yang version 0.12.1. Use Juniper proprietary remote procedure call (gRPC) and gRPC Network Management Interface (gNMI) to export statistics to an outside collector.

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

- **INITIAL_SYNC support for optics and transceiver telemetry statistics (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, JTI supports INITIAL_SYNC for leaf nodes under resource paths `/junos/system/linecard/optics/` and `/components/component/transceivers/`.

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

- **MACsec statistics (PTX10008)**—Starting in Junos OS Evolved Release 22.1R1, JTI provides ON_CHANGE and periodic streaming of Media Access Control Security (MACsec) statistics by means of Juniper proprietary gRPC and gNMI from a device to an outside collector. This feature supports the data model openconfig-macsec.yang. Additional leaves outside the scope of the data model are augmented.

To stream MACsec statistics, include the resource path `/macsec/` in a subscription.

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

- **Packet Forwarding Engine pipeline sensors (PTX10001-36MR, PTX10008, and PTX10016)**—Junos OS Evolved Release 22.1R1 introduces support for pipeline sensors with JTI. The pipeline sensors provide telemetry device monitoring by delivering NPU and ASIC counters from a device to an outside collector. The four packet and drop counter categories are interface, lookup, queueing, and host interface. Subscribe to the resource path `/components/component/integrated-circuit/pipeline-counters` to export all pipeline counters, or use `/components/component/integrated-circuit/pipeline-counters/packet/` or `/components/component/integrated-circuit/pipeline-counters/drop/` to provide packet-only or drop-only counters.

The pipeline sensors support both zero-suppression and initial sync. The zero-suppression feature streams only non-zero values. The initial sync (init-sync) feature streams all values once after the initial subscription. This one-time-only bucket of values includes zero values even if zero-suppression is enabled.

You can use native (UDP) and Juniper proprietary gRPC and gNMI to stream counters.

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

- **System, CPU, and memory statistics (ACX7100-32C, PTX10001-36MR, PTX10003, PTX10004, PTX10008 and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, JTI provides periodic streaming of system statistics, CPU statistics, and memory-related parameters. Statistics support the health-monitoring application. This feature supports the data model openconfig-system.yang version 0.10.0. It is supported using Juniper proprietary gRPC and gNMI supported.

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

Licensing

- **Juniper Agile Licensing (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, the VRF (VXLAN) and VRF (MPLS) scale licensing are soft enforced. This enhancement add additional enforcement on VRF scale license already in-place.

Juniper Agile Licensing provides simplified and centralized license administration and deployment. You can use Juniper Agile Licensing to install and manage licenses for software features.

The VRF (VXLAN) and VRF (MPLS) features are soft enforced. With soft enforcement, if you configure a feature without a license, Junos OS displays a warning when you commit the

configuration. However, the feature is operational. In addition, Junos OS generated periodic alarms indicating that you need the license to use the feature. You can see the list of alarms at [System Log Explorer](#).

[See [Flex Software License for PTX Series Routers](#) and [Juniper Agile Licensing Guide](#).]

MPLS

- **RSVP signaling over IS-IS nonforwarding adjacency (PTX10008)**—Starting in Junos OS Evolved Release 22.1R1, you can configure any Level 1-Level 2 (L1-L2) routers that have been configured as a flood-reflector client to expand the flood-reflector hops in the Explicit Route Objects (EROs) carried in the Path messages. This feature enables the L1-L2 routers to signal RSVP over IS-IS nonforwarding adjacency by expanding the flood-reflector hops in the EROs instead of propagating the Path messages over the UDP tunnels.

To know how to configure the flood-reflector interfaces, see [How to Configure Flood-Reflector Interfaces in IS-IS Networks](#).

To expand the flood-reflector hops in EROs, use the `rsvp expand-flood-reflector-hop` configuration statement at the `[edit protocols]` hierarchy level.

Using the `traceoptions (Protocols RSVP)` command with the `flag event` option, you can view the new trace messages in the file that is created.

The `show ted database` and `show rsvp session` command outputs introduce the following additional information:

Command	New Output Field	Description
show ted database	Flood reflector client, cluster-id <i><number></i>	Displays flood-reflector related information on the TE links and the cluster ID that you have connected at the client side.
	Flood reflector, cluster-id <i><number></i>	Displays flood-reflector related information on the TE links and the cluster ID that you have connected in the flood reflector.
show rsvp session	Explicit hop <i><ip-address></i> expanded	Displays the specific hop in the EROs that has been expanded by the router.

[See [How to Configure Flood-Reflector Interfaces in IS-IS Networks](#), [show ted database](#), [show rsvp session](#), and [traceoptions \(Protocols RSVP\)](#).]

- **MPLS TTL propagation flexibility for LDP-signaled LSPs (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, we support disabling time-to-live (TTL) propagation at a more granular level. You can disable it specifically for LDP-signaled label-switched paths (LSPs). When a route is very long, disable TTL propagation to ensure the TTL doesn't expire while the packet is traversing the path. This feature also gives you more flexibility in hiding your network topology.

To disable TTL propagation for LDP-signaled LSPs, use the `no-propagate-ttl` statement at the `[edit protocol ldp]` hierarchy.

Note: If the TTL value of the top label is less than the TTL value of the bottom label at an egress node, Junos OS copies the TTL value from the top label to the bottom label. In this case, the TTL value can still propagate down even when `no-propagate-ttl` is configured.

[See [no-propagate-ttl](#).]

- **Supports MD5 authentication algorithm for subnet level configuration (ACX Series, PTX Series, and QFX Series)**—Starting from Junos OS Evolved 22.1R1 Release, MD5 authentication algorithm for subnet level key configuration is supported for all Junos OS Evolved platforms. Whereas, `aes-128-cmac-96` and `hmac-sha-1-96` algorithms are not supported for subnet level key configuration in Junos OS Evolved Releases.

[See [session-group](#) and [Configuring the TCP MD5 Signature for LDP Sessions](#).]

Multicast

OpenConfig

- **OpenConfig interface configuration support (PTX10008 and PTX10016)**—Junos OS Evolved Release 22.1R1 introduces interface OpenConfig configuration support based on OpenConfig data model `openconfig-interfaces.yang`.

[See [Mapping OpenConfig Interface Commands to Junos Configuration](#).]

- **OpenConfig MACsec configuration support (PTX10008 and PTX10016)**—Junos OS Evolved Release 22.1R1 introduces Media Access Control Security (MACsec) OpenConfig configuration support. Port-level configuration is supported.

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

- **OpenConfig port mirroring configuration support (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 22.1R1 introduces local and remote port mirroring OpenConfig configuration support.

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

- **OpenConfig QoS configuration support (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)**—Junos OS Evolved Release 22.1R1 introduces quality of service (QoS) OpenConfig configuration support for forwarding classes, classifiers and rewrites, classifiers and rewrite bindings, schedulers, drop profiles, and scheduler maps.

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

- **P4 runtime support for packet I/O (PTX10008 and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, you can configure a P4 runtime agent to support packet I/O. The router supports delivery of redirected packets to the controller, and packets injected by the controller are also sent out from the designated egress interface. The P4 runtime agent runs as a Junos OS Evolved application called p4-switch on the Routing Engine and implements a P4 runtime service over a gRPC channel. The P4 runtime agent registers with the Juniper Extension Toolkit (JET) services daemon (jsd) and opens the gRPC connections by using JSD to listen for P4 requests from clients.

You configure the JSD port with the command `set services extension-service request-response grpc clear-text port port-number max-connections number`. You use OpenConfig to configure that port as a p4rt port. Finally, you configure firewall filters to match packets requiring a redirect action—that firewall filter configuration is described in Support for SDN-based network interconnects.

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

Routing Policy and Firewall Filters

- **Support for firewall filters on discard interfaces (PTX10001-36MR, PTX10004, PTX10008, PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, you can apply firewall filters on a discard interface. The action specified by the filter (log or count) is executed before the traffic is discarded. Firewall filters are supported only for IPv4 and IPv6 traffic in the egress direction of the interface.

[See [Configuring Firewall Filters](#).]

- **Support for SDN-based network interconnects (PTX10004, PTX10008, PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, you can configure certain PTX device interfaces to pass traffic towards an SDN controller. You do this using firewall filters to match and redirect packets defined at the `[edit services inline-monitoring instance name controller]` hierarchy level. Supported match criteria includes IPv4, IPv6, and family **any** (destination), VLAN ID, and certain traceroute redirect packets.

[See [Controller](#).]

Routing Protocols

- **OSPF link delay measurement and advertising (PTX10001-36MR, PTX10004, and PTX10008)**—Starting in Junos OS Evolved Release 22.1R1, you can measure and advertise various performance metrics in IP networks with scalability through probe messages that are sent by Two-Way Active Measurement Protocol (TWAMP) Light. OSPF receives probe messages and the measured values from TWAMP Light. OSPF advertises these messages as TLVs in packets. You can use these metrics to make path-selection decisions based on the network performance.

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

- **Support for DDoS IS-IS Classification and Higher DDoS Bandwidth for Layer 2 and Layer 3 protocols (PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX100016)**—Starting in Junos OS EVO Release 22.1R1, Junos OS EVO classifies IS-IS hello packets and IS-IS data packets separately and provides support for higher DDoS bandwidth for Layer 2 and Layer 3 protocols.

[See [show ddos-protection protocols isis](#) and [protocols \(DDoS\) \(ACX Series, PTX Series, and QFX Series\)](#).]

- **BMP with BGP Sharding and Update IO (PTX10004, PTX10008, and PTX10016)**—Starting in Junos OS Evolved Release 22.1R1, we support AdjOutRIBs (pre and post policy tables) through BGP Monitoring Protocol (BMP).

[See [BGP Monitoring Protocol](#).]

Source Packet Routing in Networking (SPRING) or Segment Routing

- **Avoid microloops in OSPFv2 segment routing networks (PTX10001-36MR, PTX10004, and PTX10008)**—Starting in Junos OS Evolved Release 22.1R1, you can enable post-convergence path calculation on a device to avoid microloops if a link or metric changes in an OSPFv2 segment routing network. Note that microloop avoidance is not a replacement for local repair mechanisms such as topology-independent loop-free alternate (TI-LFA), which detects local failure very fast and activates a precomputed loop-free alternative path.

To configure microloop avoidance in an OSPFv2 segment routing network, include the `maximum-labels` and `delay milliseconds` statements at the `[edit protocols ospf spf-options microloop avoidance post-convergence-path]` hierarchy level.

[See [How to Configure Microloop Avoidance for OSPFv2 SR Networks](#).]

Software Installation and Upgrade

- **Base operating system upgrade (ACX Series, PTX Series, and QFX Series)**—Starting in Junos OS Evolved Release 22.1R1, Junos OS Evolved uses the Wind River Linux LTS 19 base operating system.

This upgrade provides improved security and better performance. Prior to this release, Junos OS Evolved used the Wind River Linux 9 base operating system.

- **OpenSSL version upgrade (ACX Series, PTX Series, and QFX Series)**—Starting in Junos OS Evolved 22.1R1, we've upgraded the OpenSSL version 1.1.1 to OpenSSL version 3.0.0 with Transport Layer Security (TLS) version 1.3 protocols. The upgraded OpenSSL version 3.0.0 with TLS protocol version 1.3 provides improved security and better performance.

Additional Features

- **Check for AS matches in BGP policy AS paths without regular expressions** (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, and QFX5200)

[See [Improve the Performance of AS Path Lookup in BGP Policy.](#)]

- **Configure the ephemeral database using the NETCONF and Junos XML protocols** (ACX7100-32C, ACX7100-48L, ACX7509, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, and QFX5220)

[See [Understanding the Ephemeral Configuration Database.](#)]

- **DHCP stateless relay over EVPN-VXLAN** (PTX10001-36MR, PTX10004, PTX10008, PTX10016)

Support for DHCP relay includes DHCPv4 and DHCPv6.

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

- **Extend the configuration database size (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016)**—You can now increase the configuration database size up to 1305.99 MB. Use the `extend-size` configuration statement at the `[edit system configuration-database]` hierarchy level to extend the database size.

[See [configuration-database.](#)]

- **Hybrid Mode (Synchronous Ethernet and PTP) over LAG with PTP over Ethernet** (PTX10008 with LC1201-36CD)

[See [Hybrid Mode.](#)]

- **PFE Restart Support** (MX240, MX480, and MX960 with MPC7, MPC8, and MPC9 and MX100008, MX100016 with LC2101)

- **PFE Reset Support** (MX100008, MX100016 with LC2101) using command `set chassis error severity threshold count action reset-pfe`, for errors including ASIC errors. [See [No Link Titleerror and No Link Title.](#)]

- **Multicast support for Next-Generation MVPN** (PTX10001-36MR, PTX10004, PTX10008, and PTX10016)

Support includes:

- IR, RSVP-P2MP, and LDP-P2MP provider tunnel
- Inclusive and Selective PMSI tunnel.

[See [Multiprotocol BGP MVPNs Overview](#) and [Understanding Next-Generation MVPN Concepts and Terminology](#).]

- **PCEP session over IPv6** (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10003, PTX10004, PTX10008, and PTX10016)

[See [destination-ipv6-address](#) and [local-ipv6-address](#).]

- **Per-PFE Restart Support** (PTX10003)

Support for disable, offline and restart of individual PFEs with error log and action, using request chassis pfe and set chassis fpccommands.

[See No Link Title and No Link Title.]

- **SNMP support for interface-attached policers** (PTX10001-36MR, PTX10003, PTX10004, and PTX10008)

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

- **Support for configuring GRE tunnel encapsulation on FTIs** (PTX10003)—You can configure encapsulation by using the tunnel encapsulation gre source *address* destination *address* command at the edit interfaces fti unit *unit* hierarchy level.

Keep the following in mind when configuring this feature:

- Adding tunnel-termination makes the tunnel a de-encapsulation-only tunnel, and encapsulation is disabled.
- Specifying both the source and destination address is mandatory when you do not configure the tunnel-termination.
- Configuring a variable prefix mask on the source address is not allowed.

[See [encapsulation](#).]

- **Support for configuring UDP tunnel encapsulation on FTIs** (PTX10003)—You can configure encapsulation by using the tunnel encapsulation udp source *address* destination *address* command at the edit interfaces fti unit *unit* hierarchy level.

Keep the following in mind when configuring this feature:

- Adding `tunnel-termination` makes the tunnel a de-encapsulation-only tunnel, and encapsulation is disabled.
- Specifying both the source and destination address is mandatory when you do not configure the `tunnel-termination`.
- Configuring a variable prefix mask on the source address is not allowed.

[See [encapsulation](#).]

- **Support for FTI-based encapsulation and decapsulation of IPv4 and IPv6 packets (PTX10003)**—You can configure IP-IP encapsulation and decapsulation on a flexible tunnel interface. The default mode is loopback encap mode.

Use `bypass-loopback` statement at the `[edit interfaces fti number unit logical-unit-number tunnel encapsulation ipip]` hierarchy level to change into flattened encap mode to achieve line rate performance.

[See [encapsulation](#).]

- **Support for G.8275.1 Telecom profile (PTX10008 with PTX10K-LC1202-36MR line card)**
[See [G.8275.1 Telecom Profile](#).]
- **Support for IEEE 802.1ag and ITU-T Y.1731 standard for Ethernet service OAM on PTX10001-36MR**
[See [Introduction to OAM Connectivity Fault Management \(CFM\)](#).]
- **Synchronous Ethernet over LAG with ESMC (PTX10008 with PTX10K-LC1201-36CD line card)**
[See [Synchronous Ethernet](#) and [Ethernet Synchronization Message Channel \(ESMC\)](#).]
- **Synchronous Ethernet with ESMC support (PTX10001-36MR)**
[See [Synchronous Ethernet Overview](#) and [Ethernet Synchronization Message Channel \(ESMC\)](#).]

What's Changed

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Learn about what changed in this release for PTX Series routers.

What's Changed in Release 22.1R1

IN THIS SECTION

- [Network Management and Monitoring | 30](#)
- [Routing Protocols | 30](#)

Network Management and Monitoring

- **Chef and Puppet support removed (PTX Series and QFX Series)**—Starting in Junos OS Evolved Release 22.1R1, Junos OS Evolved does not support using Chef or Puppet to configure devices.
- **Junos XML protocol Perl modules deprecated (ACX Series, PTX Series, and QFX Series)**—We no longer provide the Junos XML protocol Perl client for download. To use Perl to manage Junos devices, use the NETCONF Perl library instead.

[See [Understanding the NETCONF Perl Client and Sample Scripts.](#)]

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

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- [General Routing | 31](#)
- [Network Management and Monitoring | 31](#)

Learn about known limitations in Junos OS Evolved Release 22.1R1 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

- If we offline multiple SIBs and halt the primary Routing Engine, the SIBs can be stuck in the offline state for 15 minutes, before it goes to offline state. [PR1584712](#)
- PTX10001-36MR PTP TC over IPv6 feature does not meet T1/T4 error for 4x25G mode when connected between two retimer ports (retimer-----retimer) that is, port 4 to port 7 in each PIC. [PR1609110](#)
- PTX10008: On a 10g port, CoS output queue schedulers transmit-rate when applied with shapers (rate-limit, exact) over an output queue, drops slightly more traffic than the configured shaping rate. [PR1620538](#)
- Powering up and configuring data path of 400G-ZR and 400G-ZR-M optics is not instant and takes more time comparatively with other optics. You must wait before switching to a new speed configuration. [PR1635443](#)

Network Management and Monitoring

- Junos OS Evolved has a feature to block or deny all hidden commands. To obtain this feature, configure the `set system no-hidden-commands` command. However, when you configure the command and commit, Junos OS blocks or denies the new netconf or junoscript XML sessions. As a workaround, delete the `system no-hidden-commands` configuration statement and start the new netconf/junoscript sessions. [PR1590350](#)
- When you edit an ephemeral instance and if the `show ephemeral-configuration merge` command runs from another terminal, then the uncommitted changes in the ephemeral instance being edited appears in the output of the `show ephemeral-configuration merge` command. [PR1629013](#)

Open Issues

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Learn about open issues in Junos OS Evolved Release 22.1R1 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)

- Protocol-specific rewrite rules are not yet supported in Junos OS Evolved based products. [PR1632134](#)

General Routing

- During boot up PTP FPGA link resets which toggles the link, Hence the message **Error: severity=Uncorrected (Fatal), type=Transaction Layer** is observed in the console. [PR1572061](#)

- Removal or addition of the nested firewall filter in lo0 sets or clear, displays the following error message:

```
Performing action log for error /fpc/0/evo-cda-bt/0/cm/0/btchip/0/
filter_action_0_intr_pmv_eq_zero (0x4514e4) in module: btchip with scope: pfe category:
functional level: minor
```

[PR1589296](#)

- Sflow ingress sampling reports incorrect OIF and NH with MPLS traffic (MPLS-IPV4/MPLS-IPV6 with ECMP and Ultimate Hop Pop(UHP)) on the egress node. [PR1602448](#)
- When the multicast traffic is sent from the Juniper Networks Session and Resource Control (SRC) to the receivers with egress sampling enabled then Jflow records report incorrect source IP and destination IP. [PR1609008](#)
- 10,000 term interface-specific-filter (with or without the fast-lookup filter statement) with a set of add or delete interface-specific-filter events leads to the evo-aftmand process generating a core file. This is not an FFT crash as the filter is programed in FLT (hence a baseline issue). [PR1610506](#)
- On PTX10016 routers, with a fully loaded chassis and all the FPCs online, if you take a SIB offline or online, the fabric link training might take around 10 minutes. [PR1611753](#)
- This is for 400G or 4x100G interfaces using 400G-ZR optics. After the data path of the optics is 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 powered-up and Tx laser enabled, a data path powering-down and re-init sequence is exercised. The Tx power level recovers back to normal. The user-visible side effect is that, if such a hardware bug is hit, the actual link up time is longer than expected. Because the workaround is built in the software, no further user-intervention is needed. [PR1616445](#)
- Traffic loss occurs on the BGP-LU paths after restoring primary paths in setup with IGP or LDP RLFA enabled. [PR1619229](#)
- When there are a lot of Fabric OAM errors raised and cleared in the system and if the system raises CM error for an unknown FPC, Packet Forwarding Engine, plane combination, then the Fabric OAM Alarm persists on the system. This alarm is benign and has no impact on functionality or operation of the system. [PR1622649](#)
- On PTX10008 routers, license installation succeeds with the request system license add terminal command but installing the same license fails with the validation hook evaluation failed error message while performing commit. [PR1628733](#)
- In some reload scenarios the config-sync service might fail due to xinetd limiting the SSH service, leading to the alarm status Major Application config-sync fail on node Re1. This might cause configuration

difference between the primary and backup Routing Engines. As a workaround, restart the service from CLI using the `restart config-sync` command. [PR1629952](#)

- In a working and non-working logs, l2d index is different for vrrp group number 187. This is the same group for which the packet gets dropped out of 400 groups, other groups are working as expected. So there is some fix which goes between working and NKWR related to l2dld which exposed the VRRP issue. Both VRRP MAC and interface MAC get stored in SLU my_mac_hash table. For finding hash index for vrrp mac we use l2dld, protocol type and vrrp group number as a key. In a non-working scenario there is a collision between interface mac and vrrp mac on same hash index. Ideally hash movement should happen to address collision but somehow it is not properly done. [PR1633986](#)
- System reboot or boot up with traffic might result in init time fabric link crc errors and small percentage of traffic drops. [PR1635178](#)
- The issue is 400G-ZR/400G-ZR-M optic transceiver firmware upgrade failure. It is a generic issue faced across all single RU platforms supporting QDD-400G-ZR/QDD-400G-ZR-M. [PR1638284](#)
- When there is a transient drop in syncE clock quality, the line card incurs a variation in time error for a few additional seconds. Time error recovers to the expected value when syncE clock quality gets restored. [PR1640332](#)
- On PTX10008, SyncE clock hold-off-time configuration does not work due to incorrectly computed timer value. Only default hold-off 1000 ms works correctly. [PR1649358](#)

Infrastructure

- On all Junos OS Evolved platforms, near-end port is not within RFC/IANA standards as the ephemeral or dynamic port range has been modified. [PR1602717](#)

Juniper Extension Toolkit (JET)

- On all Junos OS Evolved platforms, 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](#)

Network Management and Monitoring

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

Routing Policy and Firewall Filters

- On all Junos OS Evolved platforms, the unsupported configuration of BGP flow spec interface-group exclude might lead to some errors and Packet Forwarding Engine corruption, which does not permit filter bind. [PR1639391](#)

Routing Protocols

- The default remnant hold time is 300 seconds, which is not sufficient for this scale (1.7M fib routes, 37K LSPs, jflow enabled). We need to increase this hold time to 600seconds to avoid any protocol flap during the rpd crash or restart. [PR1593445](#)

User Interface and Configuration

- GrpcBundle anomalies in EDO are caused by addition and deletion of Grpc related configuration. These anomalies do not cause any functional issue. [PR1619974](#)
- The issue with patch creation is when we unprotect the configuration of type setof. During commit synchronize MGD creates the patch for backup Routing Engine and commit fails because of the wrong patch. [PR1636385](#)
- For an OpenConfig interface, if you configure a matching interface-range, then the deletion of that OpenConfig interface does not take effect. As a workaround, do not use the interface-range configuration for OpenConfig interfaces. [PR1637381](#)
- If after any configuration commit an anomaly occurs for configd in the output of the show platform object-info anomalies app configd command, the APP configd does not release the shared pointer after deleting the published object. This has no functional impact and the anomaly can be cleared by restarting the application. [PR1643192](#)

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.

Resolved Issues: 22.1R1

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Class of Service (CoS)

- MPLS fixed classifiers might not work. [PR1616492](#)

Flow-based and Packet-based Processing

- The msvcsd process might crash when you enable the `next-hop-learning` statement with the JFlow service. [PR1620569](#)
- Unable to execute `/usr/sbin/picinfo`: due to bad file descriptor while issuing the `clear services inline-monitoring statistics` command. [PR1624094](#)

General Routing

- The lacpd application time out message appears when you add the deleted lacpd application back. [PR1555106](#)
- On PTX10008 routers, CB 1 goes in to the Fault Standby state after issuing the `request node power-off re1` command. [PR1581476](#)
- Filter with forwarding-class and destination-class combined might not work. [PR1595788](#)
- When you configure multicast on the device, traffic might be silently discarded and the interface flaps, or FPC restarts. [PR1600642](#)
- MVRP enabled trunk ports might go in to the Blocked or Designated state on the PTX Junos OS Evolved platforms. [PR1601915](#)
- The `show system errors fru detail` command does not display `reset-pfe` as the `cmerror` configured action. [PR1602726](#)
- Remote aggregated Ethernet member failures (through disable or laser-off) might cause high tail drop that results in high traffic loss. [PR1604823](#)
- MACsec session might be dropped due to one way congestion. [PR1611091](#)
- Some of the fabric links might go in to the Faulty state after swapping FPC LC1201 with LC1202. [PR1612624](#)
- The rpd agent might get crashed during NSR switchover. [PR1612725](#)
- On PTX10008 and PTX10016 routers, FPCs might become nonresponsive in the `Onlining` state after the software release upgrade. [PR1614489](#)
- The `cda-bt` process generates core file when FPC becomes offline. [PR1615343](#)
- On PTX10008 and PTX10004 routers, VCCV for LDP signaled PW goes down periodically. [PR1615419](#)
- Observed 27 percent of traffic loss at 221B packet size in Junos OS Evolved 21.4 release as compared to Junos OS Evolved 21.2R1. [PR1615524](#)

- Device does not respond for traceroute while checking traceroute over VPN. [PR1615677](#)
- Primary Routing Engine0 gets reloaded unexpectedly and new-primary Routing Engine1 does not bring up IS-IS or LDP adjacencies. [PR1616114](#)
- After FPC becomes offline, minor cm-errors might occur for ZFI block on other FPCs. [PR1616179](#)
- The Strict-Priority-Scheduler (SPS) might not work accurately across port queues. [PR1616772](#)
- Limitation appears with fast-lookup-filter (FFT) usage in the ISF mode. [PR1616804](#)
- Hit with the aftmand process generates core file
`RtIfaHandler::notifyCommand,EalIfaHandler::registryClientCommand ,EalIfaHandler::OnAdd (this=0x7f2ffe40e9a0
EalIfaHandler::instance()::handler>, ifah=...) at ../../src/EalIfaHandler.cpp:222.` [PR1616909](#)
- Unexpected Routing Engine switchover might be occur. [PR1617720](#)
- Multicast traffic to mixed high-and low-priority OQs of a busy port might drop higher-priority multicast traffic. [PR1618026](#)
- Match on IPv6-prefix for prefix lengths 64 bits do not work. Prefix-lengths of [128-65] works fine. [PR1618211](#)
- On PTX10008 routers, the Output bytes and Output packets counter values under the transit statistics on the show interfaces ifl extensive command decreases along with sending protocol control packets. [PR1618587](#)
- On PTX10001-36MR routers, while issuing request system snapshot command, the snapshot message does not get captured in the /etc/motd file. [PR1618946](#)
- InputIntf gets reported incorrectly for MPLS-IPv4 and MPLS-IPv6 ingress sampling in the case of Layer 3 VPN. [PR1619052](#)
- The hardware process might crash when you pull an FPC out or some power failure or fault occurs for FPC. [PR1619102](#)
- On 10g incorrect TX rate for queues configured with mix of high-low tx rates without excess bandwidth, 100GE works properly. [PR1620284](#)
- The firewall counter does not get hit with a specific configuration sequence [Commit the FFT + ISF flag before FW spec]. [PR1620410](#)
- Incorrect sensor modeling or mapping occurs in the Telemetry streaming scenario. [PR1621037](#)
- 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](#)

- PIC becomes nonresponsive in the Offlining state when you issue the OFFLINE command right after the transceiver plugin. [PR1621694](#)
- ZTP does not work properly on the PTX Series Evolved platforms if you use an EX device as a DHCP server. [PR1621987](#)
- Interface becomes down while performing the Custom Optics Profile validation for low power mode in a non-channelized mode. [PR1624228](#)
- On PTX10008 routers, the following continuous information level syslog messages gets generated:

```
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
```

[PR1624375](#)

- The show pfe route ip command times out when the table size of the route is large. [PR1624629](#)
- BUM traffic might be dropped on ESI peer in a VLAN aware service. [PR1624677](#)
- The hwdfpc process might crash on all Junos OS Evolved platforms. [PR1624841](#)
- JNP10008-SF3, SIB-JNP10004 and JNP10016-SF3 memory errors handling improvement. [PR1625305](#)
- The mastership transfer might not be triggered on each rpd crashes if you configure switchover-on-routing-crash. [PR1625834](#)
- The primary kernel might crash if you enable NSR. [PR1626040](#)
- Add the show cda pipestats cli-pfe command to more releases for serviceability. [PR1626687](#)
- S-PTX10K-144C license SKUs do not get loaded but 400G SKUs do get loaded. [PR1627459](#)
- IP not-ECN-capable traffic does not get RED-dropped in an ECN-enabled congested queue. [PR1627496](#)
- The hwdre application might crash once gRPC/gNMI is started. [PR1627709](#)
- The DDoS filter does not classify the OSPF packets as OSPF-Hello and OSPF-Data packet. [PR1628889](#)
- The DDoS-protection protocols group arp counters do not show correct values. [PR1629097](#)
- Config-Sync failure alarm. [PR1629952](#)
- Indirect next-hop (INH) version ID higher than 255 might cause INH NH FRR session to move in to the Down state and drop the transit traffic. [PR1630215](#)

- BFD session might flap continuously with multicast enabled. [PR1630797](#)
- PCIe Bus Error associate to PTP FPGA device during scapa16 chassis reboots. [PR1631300](#)
- The rpd process generates core file on the Routing Engine1 at krt_inh.c,krt_nexthop.c,krt_remnant.c. [PR1631871](#)
- On PTX10008 routers, the Transit Loopback(LB) ping or LinkTrace(LT) PDUs do not get forwarded transparently. [PR1632255](#)
- P2MP LSP ping from bud-node fails when the branch is on another Packet Forwarding Engine. [PR1632385](#)
- The evo-cda-bt process generates core file if you use the show cda qpoll command or get-state while a Packet Forwarding Engine is offlined or faulted. The Packet Forwarding Engine also restarts. [PR1633850](#)
- Traffic impact might be seen when you configure a firewall filter-based policer for MPLS address family on the device. [PR1634644](#)
- On PTX10008 routers, the following frequent syslog message gets generated:

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

[PR1635771](#)

- The request node halt node statement might cause cm-errors. [PR1636271](#)
- Ingress PE device does not insert Sh label for BUM traffic received on the local EP ESI interface, causing packet duplication on the egress PE device. [PR1637703](#)
- JTI UDP export support for **/junos/system/cmerror/configuration** and **/junos/system/cmerror/counters** do not work on the supported chassis-based systems like the PTX10008 and PTX10016 routers. [PR1638262](#)
- There is a mismatch between the user-configured wavelength and actually transmitted wavelength on the 400G-ZR wavelength setting with 75GHz spacing. [PR1638603](#)
- On PTX10008 routers, SNMP mib get on jnxLEDxxx generates general error with core file. [PR1638768](#)
- FPC start time is incorrectly displayed under the show chassis fpc details command. [PR1641515](#)
- Multicast traffic drop might be observed after the Routing Engine switchovers or rpd restarts. [PR1593810](#)

Infrastructure

- ICMP tunneling might not work. [PR1605465](#)
- The default-address-selection statement might not work on all Junos Evolved platforms. [PR1608877](#)
- In certain circumstances, the journalctl process might be flooded with the No TTP_TLV_VRF related log messages. [PR1610313](#)
- Egress TCP RST might not have correctly populated the DSCP field. [PR1612208](#)
- The backup path is not found in the ASBR6 FIB table. [PR1618916](#)

Interfaces and Chassis

- Traffic loss occurs after restarting the SIB. [PR1560111](#)
- On PTX10003 routers, snmp walk on jnxLEDTable fails. [PR1620398](#)

Junos XML API and Scripting

- Downloading a file using the request system download command might fail. [PR1604622](#)

MPLS

- The rpd process might generate core file for few value configurations of signaling bandwidth on the container LSP. [PR1614248](#)

Network Management and Monitoring

- Incorrect IF-MIB::ifHCInUcastPkts and ifHCInBroadcastPkts statistics appears. [PR1621606](#)
- SNMP traps get generated for the second trap group. [PR1623201](#)
- False traffic spikes appear in the SNMP graphs when you use ifHCOctets or ifHCInOctets. [PR1635958](#)

Routing Policy and Firewall Filters

- Filters in openconfig acl executes terms in the order of their definition and not based on sequence-ids. [PR1621620](#)
- Services might not work after committing the firewall filter counter configuration with similar name of two terms. [PR1625168](#)

Routing Protocols

- Kernel crash might be observed on platforms having BGP configured with family Layer 2 VPN. [PR1600599](#)
- Delay occurs while adding or removing static routes from the router. [PR1612173](#)
- The memory leak on rpd might be observed after running `show route` CLI command. [PR1615162](#)
- The rpd process might crash and restart when you enable NSR. [PR1620463](#)
- The rpd process might crash after clearing IS-IS database. [PR1631738](#)
- The rpd process might go into an infinite loop while clearing the IS-IS database. [PR1632122](#)

User Interface and Configuration

- The mgd process generates core file while running any RPC post and running copy-config rpc with the unreachable host in the URL on the same netconf session. [PR1590625](#)
- Junos OS Evolved expects the key as a first element under a list in a JSON configuration payload. [PR1616216](#)
- On PTX10001-36MR routers, configd publish deleted anomalies while running p2mp rsvp eoam test. [PR1617667](#)
- The core files might not get deleted using CLI `file delete /var/core/*/vmcore*` [PR1624562](#)

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

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These release notes accompany Junos OS Evolved Release 22.1R1 for QFX5130-32CD, QFX5220-32CD, QFX5220-128C, and QFX5700 switches. 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 QFX Series switches.

What's New in 22.1R1

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EVPN

- **Optimized inter-subnet multicast in an EVPN-VXLAN fabric (QFX5130-32CD, QFX5130-48C, QFX5700)**—Starting in Junos OS Evolved Release 22.1R1, you can configure these platforms as optimized inter-subnet multicast (OISM) server leaf and border leaf devices in an EVPN-VXLAN ERB overlay fabric.

To support OISM on these platforms, you must configure:

- EVPN instances of type `mac-vrf` with `vlan-aware` or `vlan-based` service types. (See [MAC-VRF Routing Instance Type Overview](#).)
- Tenant L3 routing instances with `instance-type vrf`.
- A supplemental bridge domain (SBD) and all tenant VLANs on all OISM devices in the fabric.
- IGMP snooping on all OISM devices in the fabric.
- On the border leaf devices if you need to route multicast traffic from or to devices outside of the fabric: PIM and L3 interfaces to the external multicast rendezvous point (RP). You can't use an OISM multicast VLAN (MVLAN) for external multicast routing on these platforms.

You can use OISM on these platforms with IGMPv2 or IGMPv3. (See [Overview of Multicast Forwarding with IGMP Snooping or MLD Snooping in an EVPN-VXLAN Environment](#).)

[See [Optimized Inter-Subnet Multicast in EVPN Networks](#).]

- **Overlapping VLAN support in EVPN-VXLAN fabrics on edge-routed bridging (ERB) overlay leaf devices (QFX5130-32CD, QFX5700)**—Starting in Junos OS Evolved Release 22.1R1, we support overlapping host VLANs with access-side enterprise style interfaces on leaf devices. To enable a leaf device to process an overlapping host VLAN tag, configure the `vlan-rewrite translate` statement on an interface. Use this statement to map the host VLAN to a VLAN configured on the leaf device (which we refer to as the *mapped VLAN value*). The device processes incoming tagged packets using the mapped VLAN value instead of the host VLAN tag. On egress, the device translates the mapped VLAN value back into the host VLAN tag.

[See [Overlapping VLAN Support Using VLAN Translation in EVPN-VXLAN Networks](#) and `vlan-rewrite`.]

High Availability

- **Unified ISSU support (QFX5220-32CD)**—Starting in Junos OS Evolved Release 22.1R1, you can use unified in-service software upgrade (unified ISSU) to upgrade between two different Junos OS Evolved releases with minimal disruption on the control plane and with minimal disruption of traffic.

Use the `request system software add package-name.tgz restart` command to use unified ISSU. Use the `request system software validate-restart package-name.tgz` command to verify that your device is ready for unified ISSU.

[See [request system software add restart](#) and [request system software validate-restart](#).]

Interfaces

- **Support for SFP56+ JNP-FPC-20Y FPC (QFX5700)**—Starting in Junos OS Evolved Release 22.1R1, you can configure 10 and 25-Gbps speed with the new JNP-FPC-20Y FPC card. The line card

contains a total of 20 SFP56 ports that supports 10-Gbps and 25-Gbps speeds. You can use all the 20 ports by plugging the FPC on the 0, 2, 4, and 6 slots and use the first 16 ports by plugging the FPC on the 1, 3, 5, and 7 slots. To view the hardware compatibility matrix for optical interfaces, transceivers, and DACs supported on QFX5700, see the Hardware Compatibility Tool (HCT).

[See [Channelizing Interfaces on QFX5700 Switches](#) and [Hardware Compatibility Tool](#).]

Multicast

- **IGMP, MLD snooping, and IRB stitching with make-before-break (MBB) (ACX7100-32C, ACX7100-48L, PTX10001-36MR, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5700, and QFX5220)**—Starting in Junos OS Evolved Release 22.1R1, MBB is extended to aggregated Ethernet (AE) member link changes for all Level 2 snooping-based nexthop changes. MBB ensures that all Packet Forwarding Engines (PFE) have a consistent view thereby avoiding traffic loss or duplication.

MBB for IGMP, MLD snooping, and IRB Stitching supports:

- Aggregated Ethernet member link addition/deletion
- Aggregated Ethernet member link enable/disable

[See [IGMP Snooping Overview](#) and [Understanding MLD Snooping](#).]

Routing Protocols

- **Support for BGP route advertisement based on Packet Forwarding Engine acknowledgement (QFX5130-32CD and QFX5700)**—Starting in Junos OS Evolved Release 22.1R1, you can enable BGP to advertise routes only if the route version installed in the Routing Engine matches the route version installed in the Packet Forwarding Engine. If a mismatch occurs, then BGP withdraws the route from the forwarding path and stops advertising the route. You can enable this feature by including the request-long-lived-ack and the send-withdrawal-on-route-change configuration statements at the [edit policy-options policy-statement *policy-name* then] hierarchy level.

[See [Advertising BGP Routes Based on Packet Forwarding Engine](#).]

Software Installation and Upgrade

- **Base operating system upgrade (ACX Series, PTX Series, and QFX Series)**—Starting in Junos OS Evolved Release 22.1R1, Junos OS Evolved uses the Wind River Linux LTS 19 base operating system. This upgrade provides improved security and better performance. Prior to this release, Junos OS Evolved used the Wind River Linux 9 base operating system.
- **OpenSSL version upgrade (ACX Series, PTX Series, and QFX Series)**—Starting in Junos OS Evolved 22.1R1, we've upgraded the OpenSSL version 1.1.1 to OpenSSL version 3.0.0 with Transport Layer

Security (TLS) version 1.3 protocols. The upgraded OpenSSL version 3.0.0 with TLS protocol version 1.3 provides improved security and better performance.

- **Zero touch provisioning on WAN interfaces (QFX5700)—**

Starting in Junos OS Evolved 22.1R1, Zero Touch Provisioning (ZTP) dynamically detects the port speed of WAN interfaces and uses this information to create ZTP client ports with the same speed. ZTP automatically cycles through the WAN ports until it receives Dynamic Host Control Protocol (DHCP) options from the DHCP server. The device uses the DHCP options to perform the bootstrap process.

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

Additional Features

- **Check for AS matches in BGP policy AS paths without regular expressions** (PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, and QFX5200)

[See [Improve the Performance of AS Path Lookup in BGP Policy](#).]

- **Configure the ephemeral database using the NETCONF and Junos XML protocols** (ACX7100-32C, ACX7100-48L, ACX7509, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, and QFX5220)

[See [Understanding the Ephemeral Configuration Database](#).]

- **Disable LLDP TLV messages** (QFX5220)

[See [Device Discovery Using LLDP and LLDP-MED on Switches](#).]

- **PFE Restart Support** (MX240, MX480, and MX960 with MPC7, MPC8, and MPC9 and MX100008, MX100016 with LC2101)

- **PFE Reset Support** (MX100008, MX100016 with LC2101) using command `set chassis error severity threshold count action reset-pfe`, for errors including ASIC errors. [See [No Link Titleerror and No Link Title](#).]

- **LLDP on management interfaces** (QFX5220)

[See [Device Discovery Using LLDP and LLDP-MED on Switches](#).]

- **Precision Time Protocol (PTP) primary boundary clock over IRB for media and enterprise profiles** (QFX5220-32CD and QFX5220-128CD)

[See [PTP Media Profile](#), [PTP Enterprise Profile](#), and [PTP over IRB for Broadcast Profiles](#).]

- **Resiliency support for line card JNP-FPC-20Y** (QFX5700)

[See [QFX5700 Switch Hardware Guide](#).]

- **Service provider style interface configuration on EVPN-VXLAN Layer 3 gateways** (QFX5130-32CD, QFX5700)

Supported with:

- ERB or CRB overlay designs
- EVPN MAC-VRF routing instances with `vlan-based` or `vlan-aware` service types
- IRB configuration with `vlan-id value` or `vlan-id none` settings
- Virtual gateway address (VGA) configuration

Support doesn't include:

- EVPN MAC-VRF routing instances with `vlan-bundle` service type (both `vlan-id value` and `vlan-id-list` logical interface configurations)
- Flexible Ethernet services with service provider (SP) style and enterprise (EP) style logical interfaces on the same physical interface
- SP style and EP style interfaces in the same VXLAN VLAN
- Multiple logical interfaces on a physical interface in the same VXLAN VLAN
- IRB interfaces with `vlan-id-list` configuration
- Q-in-Q and inner VLAN tag preserved on encapsulation

[See [Using a Default Layer 3 Gateway to Route Traffic in an EVPN-VXLAN Overlay Network](#).]

- **Supported transceivers, optical interfaces, and DAC cables** (ACX 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 22.1R1](#) | 48

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

What's Changed in Release 22.1R1

IN THIS SECTION

- [Network Management and Monitoring](#) | 48

Network Management and Monitoring

- **Chef and Puppet support removed (PTX Series and QFX Series)**—Starting in Junos OS Evolved Release 22.1R1, Junos OS Evolved does not support using Chef or Puppet to configure devices.
- **Junos XML protocol Perl modules deprecated (ACX Series, PTX Series, and QFX Series)**—We no longer provide the Junos XML protocol Perl client for download. To use Perl to manage Junos devices, use the NETCONF Perl library instead.

[See [Understanding the NETCONF Perl Client and Sample Scripts.](#)]

Known Limitations

IN THIS SECTION

- [General Routing](#) | 49

Learn about known limitations in Junos OS Evolved Release 22.1R1 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 when the FEB card has a power failure the `show system alarms` CLI command displays the following error `PCI Uncorrected error on dev 0000:00:03.2` along with FEB alarm. [PR1578066](#)

Open Issues

IN THIS SECTION

- General Routing | [49](#)
- Routing Protocols | [50](#)

Learn about open issues in Junos OS Release 22.1R1 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 the QFX5130-32CD platform running Junos OS Evolved, you cannot clear or reset the disk option specified in the scheduled `request node reboot` command. The node reboots with the disk option last specified. [PR1517596](#)
- On QFX5700 platforms few interfaces do not come up after removing channelization through single commit, that is by using `delete interfaces` command. [PR1592238](#)
- On QFX5700 ungraceful removal (OIR) of FPC or an FPC fault might result in a PCIE MAJOR alarm "PCI Uncorrected error on dev 0000:00:03.0" which does not get cleared. The only way to clear this alarm is reboot of the device. There are 2 situations in which this alarm can be seen:
 1. FPC is faulty: In rare FPC fault cases, the PCI Uncorrected error alarm might be seen along with FPC going to a fault state as indicated by the `show chassis fpc` command. This is accompanied by other FPC major alarms. Once the faulty FPC is replaced with a good one, the alarm is still seen, and a reboot is required to clear this alarm. Post identification of the fault and FPC replacement, this alarm is harmless, and FPC state can be confirmed through the `show chassis fpc` command.

2. Ungraceful OIR: The ungraceful removal of FPCs is not recommended on QFX5700. This operation might result in PCI Uncorrected Error alarm. Please use one of the following methods to do a graceful FPC OIR removal:

- Execute the request chassis fpc slot <slot #> offline command from the CLI.
- Press the Offline Button for 1 second on the FPC to offline the FPC. Once the FPC is gracefully offlined both LEDs - PWR and STS go off. The FPC can be removed at this point.

[PR1620197](#)

- 400G LR4-10 link does not come up after deleting disable interface configuration statement when the port is disabled followed by system reboot. [PR1625494](#)
- If FEC errors are present on the interface and the errors are cleared using the clear statistics CLI command and subsequently unified ISSU is performed, then the FEC error counters show up negative or huge value. Subsequently if the FEC errors surpass the previous value, then the counters appear non-negative (smaller value). [PR1641583](#)
- Unexpected carrier transitions are seen on JNP-100G-2X50G-xM after cable plug out and plug in on QFX5130-32CD and QFX5220-32CD. It is observed that the Carrier Transitions counter increments by 1 on cable plug out and by 3 on cable plug in. It must increment by 1 in both cases. [PR1642744](#)

Routing Protocols

- The default remnant hold time is 300 seconds which is not sufficient for this scale (1.7M fib routes, 37K LSPs, jflow enabled). We need to increase this hold time to 600 seconds to avoid any protocol flap during rpd crash or restart set routing-options forwarding-table remnant-holdtime 600. [PR1593445](#)

Resolved Issues

IN THIS SECTION

- [Resolved Issues: 22.1R1](#) | **51**

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: 22.1R1

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- [Network Management and Monitoring | 51](#)
- [User Interface and Configuration | 52](#)

General Routing

- Filter with forwarding-class and destination-class combined might not work. [PR1595788](#)
- Traffic loss might be observed when evo-pfemamd is restarted. [PR1608004](#)
- The egress traffic drops due to the egress queue buffer stuck on 400G interfaces. [PR1618147](#)
- The native-vlan-id configured on service provider style UNI interface might not work on QFX5130 or QFX5700. [PR1618731](#)
- On performing request system snapshot, the snapshot message is not captured in /etc/motd file. [PR1618946](#)
- After sigkill or app crash, jstatsd app does not come up. [PR1641229](#)

Infrastructure

- In certain circumstances journalctl might be flooded with No TTP_TLV_VRF related log messages. [PR1610313](#)
- Tunnel interface might fail to come up if configured at the same time as its routing instance. [PR1616920](#)

Network Management and Monitoring

- False traffic spikes are seen in SNMP graphs when ifHCOutOctets or ifHCInOctets are used. [PR1635958](#)

User Interface and Configuration

- QFX5700: Not able to delete linux core files using CLI file `delete /var/core/*/vmcore*`. [PR1624562](#)

Upgrade Your Junos OS Evolved Software

Products impacted: ACX7100-32C, ACX7100-48L, ACX7509, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220-32CD, QFX5220-128C, and 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 \(Junos OS Evolved\)](#). 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.

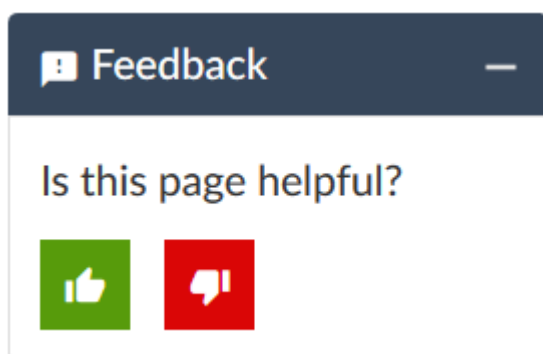
- **Juniper Networks Compliance Advisor**—Review regulatory compliance information about [Common Criteria](#), [FIPS](#), [Homologation](#), [RoHS2](#), and [USGv6](#).

<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 | 55](#)
- [Creating a Service Request with JTAC | 56](#)

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 March 2022—Revision 1, Junos OS Release 22.1R1 for the ACX7100-32C, ACX7100-48L, ACX7509, PTX10001-36MR, PTX10003, PTX10004, PTX10008, PTX10016, QFX5130-32CD, QFX5220, and QFX5700 Devices.

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