

JUNOS 4.0 Internet Software Release Notes

Release 4.0R5
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Revision 5

These release notes accompany Release 4.0 of the JUNOS Internet software. They describe the documentation for the router and known problems with the software.

You can also find these release notes on the Juniper Networks technical documentation Web page, which is located at <http://www.juniper.net/techpubs/>.

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Product Documentation

The following documentation describes the JUNOS Internet software, which is the software that runs on Juniper Networks routers:

JUNOS Internet Software Configuration Guide: Installation and System Management—Provides an overview of the JUNOS Internet software and describes how to install and upgrade the software. This manual also describes how to configure system management functions, including user accounts, passwords, and SNMP.

JUNOS Internet Software Configuration Guide: Interfaces and Chassis—Provides an overview of routing interfaces and describes how to configure routing interfaces, router chassis, firewalls, traffic sampling, and CoS.

JUNOS Internet Software Configuration Guide: Routing and Routing Protocols—Provides an overview of routing concepts and describes how to configure routing, routing policy, and unicast and multicast routing protocols.

JUNOS Internet Software Configuration Guide: Traffic Engineering—Provides an overview of traffic engineering concepts and describes how to configure traffic engineering protocols.

JUNOS Internet Software Command Reference—Describes the JUNOS Internet software commands you use to monitor and troubleshoot Juniper Networks routers.

The JUNOS Internet software runs on Juniper Networks routers, which are described in the following manuals:

M20 Internet Backbone Router Hardware Installation Guide

M20 Internet Backbone Router PIC Installation Guide

M40 Internet Backbone Router Hardware Installation Guide

M40 Internet Backbone Router PIC Installation Guide

M160 Internet Backbone Router Hardware Installation Guide

M160 Internet Backbone Router PIC Installation Guide

Release 4.0 Features

The following are the new features in JUNOS Release 4.0:

M160 Internet Backbone Router support—A new Internet Backbone Router, the M160 router can support up to 32 SDH/SONET OC-48 interfaces, providing an aggregate 160 Mpps of forwarding performance. New show chassis commands have been added to support this router.

Internet Processor II ASIC support—The Internet Processor ASIC has been revised to support firewalls on all interfaces and statistical sampling on interfaces. This ASIC is included with the M160 router. For the M20 and M40 routers, you can replace an existing System and Switch Board (SSB) and System Control Board (SCB), respectively, with SSBs and SCBs that contain the Internet Processor II ASIC. You configure statistical sampling by including statements at the new [edit forwarding-options] hierarchy level.

Support for Channelized OC-12 to DS3, Fast Ethernet, and E3 Physical Interface Cards (PICs).



Note

Before deploying a Channelized OC-12 PIC, please contact Customer Support.

In Release 4.0R3 and later, support for the OC-192 Physical Interface Card (PIC) on the M160 router.

M20 and M160 redundancy—The software supports redundant hardware in the M20 and M160 routers.

LDP—The Label Distribution Protocol (LDP) allows routers to establish label-switched paths (LSPs) through a network by mapping network-layer routing information directly to data link layer switched paths. LDP operates in a hop-by-hop fashion as opposed to RSVP's end-to-end fashion. For this reason, RSVP is capable of traffic engineering but LDP is not. The JUNOS implementation of LDP allows Juniper Networks routers to participate in LDP signaling for non-traffic-engineered LSPs. In addition, a Juniper Networks router can be a core router in a network in which the edge routers use LDP to support certain services, such as certain kinds of VPNs.

**Note**

Changes were made to LDP in Release 4.0R3 that renders the release incompatible with Release 4.0R1.

BGP enhancements:

You can now select multiple EBGP paths as active and load-balance traffic across multiple EBGP or confederation peerings.

You can now set an upper limit on the number of prefixes received from each neighbor that can be placed in each routing table. To do this, include the `prefix-limit` statement at the `[edit protocols bgp group group-name (any | multicast | unicast)]` hierarchy level.

You can now configure BGP with a different local AS number for each EBGP session.

The BGP `nlri` statement has been renamed `family`.

You can now choose `always-compare-med` as an option on the `path-selection` statement at the `[edit protocols bgp]` hierarchy level.

You can now include most BGP statements at the global, group, and neighbor levels.

IS-IS authentication enhancements—You can now configure authentication on each interface and on each IS-IS level.

RIP MD5 authentication—You can now configure RIP MD5 authentication.

OSPF MIB support—Most of RFC 1850 is supported, except for the following:

`ospfOriginateNewLsas` and `ospfRxNewLsas` objects

Host table

`ospfOriginateLSA`, `ospfLsdbOverflow`, and `ospfApproachingLsdbOverflow` traps

Test policy counters—The test policy command now displays the number of prefixes that match and do not match the tested policy.

Telnet TCP port number specification—You can now specify the port number in the telnet command.

ATM inverse ARP—Devices connected to an ATM virtual circuit can dynamically discover IP addresses. The software supports ARP responses only.

ATM VBR fine-grain shaping—When configuring ATM traffic shaping, you can now configure more granular rate increments.

Multiple domain names—You can now include multiple domain names in the domain-search statement at the [edit system] hierarchy level.

mtrace command—This command allows you to trace multicast paths from sources to receivers.



Note

Before deploying the mtrace command, please contact Customer Support.

The default and maximum media MTU sizes have changed as described in the *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*.

Configure the hold time for physical interfaces—The hold-time statement at the [edit interfaces *interface-name*] hierarchy level allows you to configure the hold-time value to use to damp interface transitions. When an interface goes from up to down, it is not advertised to the rest of the system as being down until it has remained down for the hold-time period. Similarly, an interface is not advertised as being up until it has remained up for the hold-time period. By default, interface transitions are not damped.

Chassis source-route and no-source-route statements—These statements at the [edit chassis] hierarchy level allow you control IP source-route processing.

User interface and system management:

Individual command authorization, configurable per login class and using RADIUS—Each command-line interface (CLI) command and each configuration statement has an access privilege level associated with it. Users can execute only those commands and configure and view only those statements for which they have access privileges. For each login class, you can explicitly deny or allow commands that would otherwise be permitted or disallowed by a privilege level specified in the permissions statement. To do this, you specify regular expressions in the allow-commands and deny-commands statements at the [edit system login class] hierarchy level or you specify JUNOS-specific attributes in your RADIUS authentication server's configuration.

Juniper Networks–specific RADIUS attributes—The JUNOS software supports the configuration of Juniper Networks–specific RADIUS attributes. These attributes are known as vendor-specific attributes and are described in RFC 2138, *Remote Authentication Dial In User Service*.

Configuration comparison—In configuration mode, when you have made changes to the configuration and want to compare the candidate configuration with a prior version, you can use the compare command to display the configuration. The compare command compares the candidate configuration with either the current committed configuration or a configuration file and displays the differences between the two configurations.

Configuration groups—You can group repeated portions of a configuration and then have them be inherited throughout the configuration. To do this, include the group statement at the [edit] hierarchy level and the apply-groups statement at the desired level of the configuration.

SNMP chassis MIB support for the M160 router.

Support for multicast MIBs.

SNMP interface one-second rate counters.

Syslog facility override and log prefix support—The facility code for syslog messages forwarded to a remote host can be set to a configured value, and a user-specified prefix can be added to each message.

Online documentation—The configuration mode help command has been extended to include the reference and topic options, which provide more detailed help about configuration statements. The text for the more detailed help is identical to that in the *JUNOS Internet Software Configuration Guide*.

You can now suppress monitor and syslog output. To do this, type Esc-q.

The following keyboard sequences have been added: history search (Ctrl-r), history expansion (Esc-/), and yank (Ctrl-y).

The new command show system boot-messages shows the messages that were displayed when the router booted.

The new command clear log clears the contents of log files.

New options have been added to the request system software add command. Use the delay-restart option to not restart daemons during a software installation. Use the reboot option to reboot the system after the software installation is complete. Use the no-copy option when you do not want to save copies of the new package files.

The set cli restart-on-upgrade CLI environmental command allows you to set whether the CLI prompts you to restart the router after you upgrade the software.

The show connections command has been added to display information about circuit cross-connect connections.

OSPF logs transitions into Full state, which provides a positive confirmation that the adjacency has completed.

The no-resolve option has been added to the show arp command. Use this option when you do not want ARP to attempt to resolve addresses.

The clear ospf statistics and clear rip statistics commands have been added.

**Warning**

For M20 routers that have two Routing Engines, both Routing Engines must be running JUNOS Release 4.0 or later. Do not run JUNOS Release 3.4 on one of the Routing Engines and Release 4.0 on the other. (Note that JUNOS Release 3.4 does not support Routing Engine redundancy, so if you are using this release of the software, only one Routing Engine can be installed in the M20 router. It can be installed in either slot.)

If one Routing Engine is running JUNOS Release 4.0 or later, and the other is running Release 3.4, no part of the router's Packet Forwarding Engine will be able to boot. The router's internal Ethernet links will be functional, but the SSB and FPC boards will not be able to boot.

If you have JUNOS Release 3.4 installed on one of the Routing Engines and Release 4.0 or later on the other, either remove the backup Routing Engine from the router or install Release 4.0 or later on that Routing Engine.

Current Software Release

The current software release is Release 4.0R5. For information about obtaining the software packages, see the Juniper Networks Support Web page, <http://www.juniper.net/support/>.

For upgrade instructions, see the section "Upgrade to Release 4.0" on page 14.

Resolved Issues

The following issues have been resolved since JUNOS Release 4.0R4. The identifier following the description is the tracking number in our bug database.

Platform and Forwarding

In rare cases, a write to the rotating media or flash failed and the system might have retried the write forever, causing the writing process to stop, instead of detecting the write error. [PR/9361]

On connections over Ethernet interfaces, routes that pointed at load-balancing next hops might not have always been told when the next hops changed, leading to route blackholes or misdirected traffic. The workaround was to disable per-packet load-balancing. [PR/9378]

On an M160 router, in rare cases, the SFM might have failed to come online and the Routing Engine might not have received the resync hronize message from the SFM, causing the Routing Engine to never mark the SFM as online. [PR/9822]

Interfaces and Chassis

When the chassis was not over the temperature limit, the system intermittently generated an alarm about the temperature of the chassis being over the shutdown limit and cleared the alarm 5 seconds later. [PR/8949]

On the M160 router, if an FPC rebooted, ATM interfaces might have stopped transmitting packets. [PR/9260]

Simple Network Management Protocol

During periods of high load, such as when servicing statistics requests, the packet forwarding engine process might have consumed all available buffers, leading to FPC failure. [PR/9278]

If the sum of the configured priority costs for the VRRP-tracked interfaces exceeded the VRRP group's priority, the VRRP process might have dumped core. This misconfiguration is now detected when you commit configuration changes. [PR/9806]

The M160 router generated false alarms that reported fan failure traps and power supply failure traps every hour. The same false alarms might also have happened on the M20 router, except these traps report the failure of the backup Routing Engine. [PR/8910]

When the SNMP process could not communicate with the SNMP agent, the SNMP process placed a large number of SNMP_SUBAGENT_NO_BUFFERS log messages into the system log. [PR/9287]

The v1_traps.txt file contained extra characters that caused HP OpenView not to compile the file. [PR/9532]

General Routing

When interfaces disappeared and reappeared while the routing protocols process (rpd) was experiencing heavy load, rpd never noticed that the interfaces disappeared and reappeared. This might lead to incorrect next hops. [PR/9255]

In routes in which BGP routes relied on large numbers of IGP next-hop routes, IGP adjacencies might have dropped when an interface changed state. [PR/9393]

In an AS path regular expression, the plus (+) operator might not have worked correctly if it appeared in the middle of the expression. [PR/9534]

When an ATM interface was configured the same way as another interface in the router that was disabled, the ATM interface might have appeared to be up but did not transmit locally-generated packets. [PR/9659]

If you issued the show route community *community-id* command simultaneously in two different sessions, the routing subsystem might have restarted. The workaround was to not issue this command in two sessions at the same time. [PR/9745]

Routing Protocols

If an interface was listed in an administratively scoped multicast region and that interface did not exist during initialization, the interface was never pruned. [PR/1269]

If you issued the following sequence of commands in rapid succession, the routing process might have restarted:

```
user@host> set protocols isis interface interface-name level level-number disable
user@host> commit
user@host> delete protocols isis interface interface-name level level-number disable
user@host> commit
```

The workaround was to allow for a delay between commits. [PR/6684]

If you configured multicast scopes, routing might have terminated abnormally after you reconfigured the software. [PR/8524]

IS-IS advertises routes from Level 1 into Level 2 by default but failed to advertise the directly attached interface routes into Level 2 unless they were configured as Level 2. The workaround was to include the passive statement at the [edit protocols isis interface *interface-name* level 2] hierarchy level for these interfaces. [PR/9392]

- An SNMP query to get the status of an OSPF neighbor (the object ospfNbrEntry) might cause the routing protocol process to restart. [PR/9398]
-
- The routing protocol process (rpd) might have dumped core because of synchronization errors. [PR/9496]
-
- When a PIM null register was received at the RP and MSDP peers were configured, the router incorrectly sent a Source Active message with the pseudo-IP header as data. [PR/9672]
-
- Triggered PIM joins were not sent out in a timely manner. [PR/9764]
-
- **MPLS Applications** CSPF might have computed a valid path that appeared to contain loops, causing RSVP not to establish the path. [PR/6335]
-
- On the ingress router, the MPLS statistics log file messages might have contained large numbers in the ignored field, although the label-switched paths are fine. [PR/9339]

Outstanding Issues

This section lists outstanding issues with this release of the JUNOS software. The identifier following the description is the tracking number in our bug database.

- **Platform and Forwarding** Occasionally, when the Routing Engine is rebooted, a FIN is not sent for an open TCP connection (for example, when using the rlogin command). This might cause the TCP connection to hang. [PR/8081]
-
- If a route entry has accounting enabled and the outbound interface for the route has an outbound filter specified, the route entry counter might not function correctly. There is no workaround. [PR/9005]
-
- **User Interface and Configuration** If you issue a load replace command on a portion of the configuration that is marked with the inactive: tag as being deactivated, and if the newly replaced configuration does not contain the inactive: tag, the inactive: tag is not removed from the configuration and that portion of the configuration remains deactivated. [PR/7671]
-
- If you use the insert command to insert nonexistent statements into the configuration, errors might not be displayed or logged. As a workaround, configure statements first before using the insert command to change the order of the statements. [PR/7866]
-
- Inserting a route filter before the first route filter in a term might fail. [PR/9414]
-
- **Interfaces and Chassis** The precedence bits can be rewritten only for transit traffic. The precedence bit field in traffic sourced by the router might not be rewritten. [PR/5693]
-
- The APS process (apsd) signals 1+ 1 APS instead of the correct 1:1 APS in the K2 SONET overhead. This most likely has no operational impact. [PR/8607]
-
- If you configure the revert timer only on the protect circuit, forced reversion does not work. [PR/8932]
-
- When you deconfigure a loopback on a SONET/SDH interface, the show interface command shows that the link flags still show loop detected. To clear the link flags, take the PIC offline and online again. [PR/9032]

Previous Software Releases

Release 4.0R4

The following issues have been resolved since JUNOS Release 4.0R3. The identifier following the description is the tracking number in our bug database.

Platform and Forwarding

When a router was configured to handle multicast, its kernel could slowly lose available memory. On a router with a lot of multicast traffic, the routing process could stop running after about 8 weeks of continuous operation. To check to see if the router is approaching its limit, issue the `vmstat -m | egrep '(MemUse | if_list)'` command from the shell and check to see if the amount of "MemUse" is approaching the amount of "Limit." [PR/7369]

Interfaces and Chassis

If you added an invalid address on a logical interface and then added a route under that address, the interface process (dcd) might have crashed when you committed the configuration. [PR/2919]

For channelized interfaces, when channel 0 was nonoperational, APS considered all channels to be nonoperational. [PR/8760]

Logs from an M20 router incorrectly indicated that the router was an M40 router. [PR/8781]

If a PPP link on which keepalives were enabled was connected to a peer on which keepalives were disabled, and if the link went down, you had to manually intervene to bring the link back up. [PR/9075]

General Routing

When the SCB restarted, some interface routes in the forwarding table remained down even when the corresponding interface was up. The workaround was to disable and reenable the affected interfaces or to restart routing. [PR/8742]

It took too long to configure long AS path regular expressions. [PR/9008]

If you specified a value of 0 for the first AS number in a BGP community, the value was considered to be invalid. [PR/9131]

Routing Protocols

On an EBGp peering, if the peer announced a secondary address as the next hop for its routes, the software rejected the routes. The correct behavior is to accept the next hops if they belong to a secondary subnet on the same interface. The workaround was to include the `multihop` statement at the `[edit protocols bgp group groupname]` hierarchy level. [PR/8764]

If you enabled traffic engineering shortcuts and some MPLS LSPs became nonoperational, IS-IS might have caused the routing process to terminate abnormally. [PR/8793]

If you configured OSPF with multiple unnumbered point-to-point adjacencies between two routers and if one adjacency went down, the software did not remove the route to the adjacent routers' loopback interface. [PR/8825]

If you deleted a multicast route while SNMP was checking the `ipMrouteTable`, the routing protocol process (rpd) might have terminated abnormally. [PR/9083]

If there were three or more BGP paths for a prefix and if two of the prefixes shared the same neighbor AS (for path selection purposes), the software might have failed to select the correct path as the active path when one of the inactive paths was deleted. [PR/9089]

If PIM was not configured on an upstream interface, if an mtrace request was received on a source on that interface, and if the route did not contain an upstream next-hop address, routing might have terminated abnormally. [PR/9133]

MPLS Applications

For traffic traversing an LSP, you can now disable IP TTL decrementing in one of two ways. The first way is the existing way, to include the no-decrement-ttl statement. There is no change in its behavior. However, note the following about this statement:

You enable it on individual LSPs.

It is a RSVP-specific feature and is not applicable to other types of LSPs, such as LDP LSPs.

It is specific to the JUNOS software. Other vendors are not expected to interoperate with it.

The second way is the new way, to include the no-propagate-ttl statement. [PR/8859]

If you configured RSVP authentication keys, the software did not hide or encrypt them. [PR/8912]

The maximum bandwidth you could configure for an LSP is approximately 4 Gbps, which was not large enough for OC-192 interfaces. [PR/8936]

Release 4.0R3

The following issues have been resolved since JUNOS Release 4.0R1. The identifier following the description is the tracking number in our bug database.

Platform and Forwarding

When you have configured a Tunnel PIC in conjunction with a PIM Version 2 RP and MSDP, you might have seen the following error [PR/8374]:

```
Apr 6 10:26:26 router1 tnp_scb RT: Failed prefix add IPv4 - c7:4d:c2:fd104 , nh_id 92,
ifl_index 27, flags 0x10, type 9, cos_index
Apr 6 10:26:26 router1 tnp_scb RT: Failed prefix add IPv4 - c7:4d:c2:fd104 (invalid
parameters)
```

When you configured the no-decrement-ttl statement for an LSP, an invalid ICMP TTL expired response was sent. [PR/8099]

Under some circumstances, the Packet Forwarding Engine might have logged errors similar to "PFEMAN: Couldn't write "rt prefix stats reply" msg to master pipe" because of a temporary shortage of reply message buffering. The lack of buffer space caused statistics requests (for example, a show interfaces command) to not be fulfilled. There is no operational impact. There is no workaround. You should retry the command. [PR/8682]

Interfaces and Chassis

Individual sampled packets in the /var/tmp/sampled.pkts file did not have timestamps associated with them. The timestamp option has been added to the output configuration statement at the [edit forwarding-options sampling] hierarchy level so that timestamps are included in the file. [PR/8133]

The byte count and bps rate displayed in the output of the monitor interface command for an OC-192 PIC running at line rate overflowed the line and caused the delta count to appear on a new line. [PR/8312]

When an interface was running in SDH mode, parameters in the output of the show interface command were labeled as SONET. [PR/8333]

MPLS could not handle unnumbered next hops over point-to-point Frame Relay and ATM interfaces. [PR/8403]

Sometimes, under heavy system load, the show interface command failed with the message "No buffer space available." There was no operational impact. Now with the fix, when you issue this command, the software tries up to four times to fulfill the request, pausing between each try. If the command is still unsuccessful, enter the command again. [PR/8636]

Simple Network Management Protocol

When you queried a point-to-point interface for ifInOctets and ifOutOctets, the value returned for the logical interface might have been higher than the value returned for the physical interface. Point-to-point interfaces include SONET/SDH and T3 interfaces. As a workaround, use the physical interface's statistics as a substitute if there is only one logical unit per physical interface. [PR/6934]

Some SNMP get-next requests might have caused the MIB process to enter an infinite loop, which caused portions of the MIB to become unavailable. If this occurs, restart the MIB process to clear the condition. [PR/8484]

The jnxContainersType for the Routing Engine returned an incorrect object identifier (OID); the OID should have been jnxSlotRoutingEngine. [PR/8534]

General Routing

If you configured a long AS path in the as-path statement, when you committed the configuration, the routing protocol process scheduler could have slipped for a long time (up to 40 seconds) parsing the AS path list, which might have caused protocol adjacencies to drop. [PR/8007]

AS path regular expressions with optional alterations did not match all the AS paths that they should have. [PR/8516]

AS path regular expressions of the form "(1*)?" did not properly match AS paths. [PR/8518]

The AS path regular expression "" did not properly match a null or empty AS path. Instead, it was interpreted as the AS path regular expression ".*". There is no workaround. [PR/8665]

Routing Protocols

When multicast session announcements did not include a session lifetime, SAP could not clean up when sessions closed. As a workaround, do not enable SAP if you receive this type of announcement. [PR/8046]

PIM might have sent duplicate join and prune traffic and thus used too much of the router's CPU. [PR/8051]

If traffic-engineering shortcuts were configured, OSPF leaked memory at a slow rate, and the routing protocol process used up all available memory after a few weeks. As a workaround, deactivate shortcuts. [PR/8243]

IS-IS route advertising might not have worked correctly when trying to advertise routes from Level 2 to Level 1. There is no workaround. [PR/8305]

The command `show route advertising-protocol bgp x.x.x.x y/z` might have hung when the prefix `y/z` was not being advertised to the BGP neighbor `x.x.x.x`. [PR/8332]

If a neighboring domain accidentally sent shared tree joins across the domain border, the joins were propagated towards this domain's RP instead of being dropped at the border. The RP mismatches were logged. [PR/8338]

If PIM tracing was enabled and there is no RP for a group (either because none is configured or a dynamic RP has not been learned yet), PIM might have terminated abnormally. [PR/8442]

When traffic-engineering shortcuts were configured and the `no-decrement-ttl` statement was configured on one-hop LSPs, IS-IS and OSPF did not use these one-hop LSPs in their SPF calculations. As a workaround, do not configure the `no-decrement-ttl` statement on one-hop LSPs. [PR/8445]

MPLS Applications

You could configure static label-mapping entries on each interface but not across all interfaces on the router. [PR/7358]

If the label path to a destination changed, LDP might have left unused routes in the `mpls.O` table. [PR/7966]

LDP might have left stale information in the `mpls.O` routing table. [PR/8198]

If LDP was deactivated or unconfigured, the routing protocol process (`rpd`) might have restarted. [PR/8287]

When `fast-reroute` and `adaptive` and `standby` LSPs were configured, RSVP might have dumped core due to mismatching LSPs from different sources. [PR/8508]

Errata

This section lists outstanding issues with the documentation:

Routing Engine redundancy—For routers that have multiple Routing Engines, by default, the Routing Engine in slot 0 (RE0) is the master and the one in slot 1 (RE1) is the backup. In this case, if you issue the request chassis routing-engine master switch command to set RE1 to be the master and RE0 to be the backup, and if the chassis software process (chassisd) then restarts for some reason, RE0 will again become the master Routing Engine and RE1 will again be the backup.

If you modify the default master and backup arrangement, configuring RE1 to be the master and RE0 to be the backup, and if you issue the request chassis routing-engine master switch command to set RE1 to be the master and RE0 to be the backup and chassisd then restarts for some reason, RE1 will again become the master Routing Engine because it is configured to be the master and RE0 will again become the backup.

The configurations on the two Routing Engines do not have to be the same, and they are not automatically synchronized. As a result, if you place two different configurations on the two Routing Engines, if chassisd restarts and if the configurations are such that Routing Engines are configured to be either both masters or both backups, RE0 will become the master and RE1 will become the backup.

Upgrade to Release 4.0

Upgrade from Release 3.3 or 3.4

To upgrade to Release 4.0 from JUNOS Release 3.3 or 3.4, you remove the Release 3.3 or 3.4 bundle and install the Release 4.0 base software packages.

To upgrade to Release 4.0, follow these steps:

1. Delete the software packages that are currently installed:

```
user@host> request system software delete jroute-3
user@host> request system software delete jpfe-3
user@host> request system software delete jkernel-3
```

If you are deleting a Release 3.3 package, specify jpfe_m40-3 in place of jpfe-3.

2. Add the JUNOS Release 4.0 base software.



Note

When upgrading from any version of JUNOS Release 3 to Release 4.0, you must install the JUNOS 4.0 base software.

For customers in the United States and Canada, use the following command:

```
user@host> request system software add path/jbase-4.0R1-domestic.tgz
```

path is the full path name to the base software. To download the software from the Juniper Networks FTP site, specify *path* as
ftp://ftp.juniper.net/private/junos/4.0R5/jbase-4.0R1-domestic.tgz.

For all other customers, use the following command:

```
user@host> request system software add path/jbase-4.0R1-export.tgz
```

path is the full path name to the base software. To download the software from the Juniper Networks FTP site, specify *path* as
ftp://ftp.juniper.net/private/junos/4.0R5/jbase-4.0R1-export.tgz.

3. Add the new package:

```
user@host> request system software add path/jbundle-4.0R5.tgz
```

path is the full path name to the file. To download the software from the Juniper Networks FTP site, specify *path* as
ftp://ftp.juniper.net/private/junos/4.0R5/packages/All/jbundle-4.0R5.tgz.

4. Reboot the router to start the new software:

```
user@host> request system reboot
```

Upgrade from an Earlier Release of JUNOS 4.0

To upgrade to Release 4.0R5 from an earlier release of JUNOS 4.0, install the JUNOS 4.0R5 software packages on top of the Release 4.0 operating system base (jbase). You do not need to upgrade the base software or delete the previous packages. To upgrade to Release 4.0R5, follow these steps:

1. Add the new package:

```
user@host> request system software add path/jbundle-4.0R5.tgz
```

path is the full path name to the file. To download the software from the Juniper Networks FTP site, specify *path* as
ftp://ftp.juniper.net/private/junos/4.0R5/packages/All/jbundle-4.0R5.tgz.

2. Reboot the router to start the new software:

```
user@host> request system reboot
```

Downgrade from Release 4.0

To downgrade from Release 4.0 to Release 3.3 or Release 3.4, you must reinstall the previous software completely from a boot disk.

Contact Juniper Networks

For technical support, contact Juniper Networks at support@juniper.net.

If you are reporting a software problem, please issue the following command from the CLI before contacting support:

```
user @ host> request support information | save filename
```

For documentation issues, contact Juniper Networks at tech-doc@juniper.net.

To provide a core file to Juniper Networks for analysis, gzip the file, rename the file to include your company name, copy it to [ftp.juniper.net:pub/incoming](ftp://ftp.juniper.net:pub/incoming), and then send the filename, along with software version information (the output of the `show version` command) and the configuration, to support@juniper.net.

Revision History

16 August 2000—Release 4.0R5.

30 June 2000—Release 4.0R4.

24 May 2000—Add note about Channelized OC-12 PIC.

12 May 2000—Release 4.0R3.

31 March 2000—Release 4.0R1.

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