



ERX Edge Routers Release Notes

Release 4.0.4

Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089
USA
408-745-2000
www.juniper.net

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Writers: Brian Wesley Simmons
Editor: Fran Mues

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Release Installation

Complete procedures for installing the system software are available in the *ERX Installation and User Guide, Appendix E, Installing ERX System Software*. Before upgrading to a new version of software, save your system's running configuration to a .cnf file or .scr file. If you subsequently need to downgrade for any reason, you can restore the earlier software version.



Note: *When you upgrade the software on a system that has a large number of interfaces configured, the system may appear to be unresponsive for several minutes. This condition is normal, and you should allow the process to continue uninterrupted.*

Upgrading from a 3.x Release to a 4.x or Higher Release

You must perform a factory reset if you want to upgrade from a release lower than 4.0.0 to Release 4.0.0 or higher. To retain your system configuration, perform the following steps:

- 1** Set the terminal length of the console to 0.
- 2** While running a release lower than 4.0.0 on a configured system, use the **show configuration** command to create a configuration script by redirecting the output to a file before you install 4.0.0 or higher software.
- 3** Verify that the script was created.
- 4** Install the 4.0.0 or higher software.
- 5** Run the configuration script after the new software has been installed and all line modules are online.

The following screen output illustrates the process.

```

host1#term length 0
host1#show configuration &> 3-2-3.scr
  -- show config output --
  ...
  ...
host1#dir

```

file	size	unshared size	date (UTC)	in use
config.cnf	531755	531755	06/27/2002 13:02:18	
reboot.hty	1536	1536	06/27/2002 13:43:40	
3-2-3.rel	69840063	69840063	06/25/2002 11:15:30	!
3-2-3.scr	149327	149327	06/27/2002 14:40:28	
erx_4-0-0.rel	87104081	87104081	06/27/2002 15:52:36	

```

host1#config t
Enter configuration commands, one per line.  End with ^Z.
host1(config)#boot config factory-defaults
WARNING: Execution of this command will cause all configuration settings to
  revert to factory defaults upon the next system reboot.
Proceed with 'boot config factory-defaults'? [confirm]

host1(config)#boot system erx_4-0-0.rel
Please wait.....
WARNING: It is recommended that you copy the current running-configuration
  to a file prior to running with a different release of software.
host1(config)#exit
host1#reload
WARNING: Execution of this command will cause the system to reboot.
Proceed with reload? [confirm]
Reload operation commencing, please wait...
  -- Reload/boot messages --
  ...
  ...
Logged in on console 0.
Copyright (c) 1998-2002 Juniper Networks, Inc.  All rights reserved.

host1>enable
host1#dir

```

file	size	unshared size	date (UTC)	in use
config.cnf	531755	531755	06/27/2002 13:02:18	
reboot.hty	1536	1536	06/27/2002 13:43:40	
3-2-3.rel	69840063	69840063	06/25/2002 11:15:30	
3-2-3.scr	149327	149327	06/27/2002 14:40:28	
erx_4-0-0.rel	87104081	87104081	06/27/2002 15:52:36	!

* File is not stored in main file system and is not included in capacity figures

host1#**show version**

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System Release: erx_4-0-0.rel

Version: 4.0.0 release-0.0 (June 23, 2002 20:03)

System running for: 0 days, 0 hours, 4 minutes, 12 seconds

(since WED JUN 27 2002 16:03:21 UTC)

slot	state	type	admin	spare	running release
0	online	SRP-10Ge	enabled	---	erx_4-0-0.rel
1	---	---	---	---	---
2	online	TUNNEL-SERVER	enabled	---	erx_4.0.0.rel
3	online	OC3d	enabled	---	erx_4-0-0.rel
4	online	GE(P1)	enabled	---	erx_4-0-0.rel
5	online	COC3-4	enabled	---	erx_4-0-0.rel
6	---	---	---	---	---

host1#**conf f 3-2-3.scr**

Proceed with configure? [confirm]

host1#

Moving Line Modules Between Releases

The ERX-1440 router employs a 40-Gbps SRP module and a new midplane. Release 3.3.2 was the first software release to support the 40-Gbps SRP module and midplane. Before you can transfer a line module from an ERX-705, ERX-710, or ERX-1400 router to an ERX-1440 router, you must first load Release 3.3.2 or a higher release onto the current router, and then reboot the router to load the release onto the line modules. If you then move any of those line modules to an ERX-1440 router, that router is able to recognize the line module.

If you move a line module from an ERX-1440 router to an ERX-705, ERX-710, or ERX-1400 router, the module will load properly in the new router regardless of the release.

SRP Module Memory Requirements

You must have at least 512 MB of memory on the SRP module to run the current software release.

Hardware and Software Compatibility

For important information on the compatibility of hardware and software, allowable combinations of line modules, and memory requirements, see *ERX Release Notes 4.0.3*, *Appendix B*, *ERX Modules*.

Release Overview

These *Release Notes* cover Release 4.0.4 of the system software for the ERX-700 and ERX-1400 series edge routers. If the information in these *Release Notes* differs from the information found in the published documentation set, follow these *Release Notes*.

Topic	Page
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Before You Start

These *Release Notes* include information on the changes between Releases 4.0.3 and 4.0.4. Before you use your new software, read these *Release Notes* in their entirety, especially the section *Known Problems and Limitations*. You need the following documentation to fully understand all the features available in Release 4.0.4:

- These 4.0.4 *Release Notes*, which describe changes between Releases 4.0.3 and 4.0.4.
- The 4.0.3 *Release Notes*, which describe features available in Release 4.0.3.
- The 4.0.x ERX system documentation set, which provides detailed information on features available in Release 4.0.2.

If the information in your current *Release Notes* differs from the information found in the other documentation sources, follow the *Release Notes*.

The 4.0.x ERX documentation set consists of several manuals and is available in electronic (PDF) or printed format. Refer to the following table to help you decide which document to use.

If you want . . .	Go to . . .
Install the system	<i>ERX Installation and User Guide</i>
Get up and running quickly	<i>ERX Installation Quick Start poster</i>
Configure the system	<i>ERX System Basics Configuration Guide</i>
Configure physical layer interfaces	<i>ERX Physical and Link Layers Configuration Guide, Part 1</i>
Configure link layer interfaces	<i>ERX Physical and Link Layers Configuration Guide, Part 2</i>
Configure routing management	<i>ERX Routing Protocols Configuration Guide, Vol. 1</i>
Configure routing protocols	<i>ERX Routing Protocols Configuration Guide, Vol. 1, Part 1</i> <i>ERX Routing Protocols Configuration Guide, Vol. 2</i>
Configure policy management and quality of service (QoS)	<i>ERX Policy and QoS Configuration Guide</i>
Configure remote access	<i>ERX Broadband Access Configuration Guide</i>
Get specific information about commands	<i>ERX Command Reference Guide</i>
Get a high-level overview of the ERX system and its architecture	<i>ERX Product Overview Guide</i>

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- Within the United States, call 1-888-314-JTAC
- Outside the United States, call 408-745-9500
- Send e-mail to support@juniper.net

Release Highlights

Release 4.0.4 is a maintenance release, but does include the following software feature.

HDLC

- New MRU and MTU Maximums for HDLC Interfaces

On the CE1, CT1, cOCx/STMx, CT3, E3-FRAME, HSSI, POS, T3-FRAME, and X.21/V.35 line modules, the maximum allowable size in bytes of the MRU and MTU for HDLC interfaces has been changed to 10,000 minus the CRC size.

The CRC size can be set to 16 (2 bytes), 32 (4 bytes), or none. The total value of the MRU/MTU size and CRC size combined cannot exceed 10,000 bytes on any line module.

If you set the MRU/MTU size to a value greater than 10,000 minus the CRC, the router issues a warning and automatically sets the MRU/MTU size to one of the following values:

- > 10,000 if the CRC is set to none
- > 9998 if the CRC is set to 16
- > 9996 if the CRC is set to 32

If you attempt to increase the CRC to a value that exceeds the 10,000-byte maximum after the MRU/MTU size is set, the **crc** command will fail. For example, if the MTU for a POS module is set to 9998, attempting to increase the CRC value from 16 to 32 would result in a combined value that exceeds 10,000 bytes, and will therefore cause the **crc** command to fail.

Release Software Protocols

The following list identifies the major software protocols supported in this release.

Core Routing Stack

- Internet Protocol (IP)
- Transmission Control Protocol (TCP)
- User Datagram Protocol (UDP)

Routing Protocols

- Border Gateway Protocol (BGP-4)
- Distance Vector Multicast Routing Protocol (DVMRP)
- Intermediate System-to-Intermediate System (IS-IS)
- Internet Group Membership Protocol (IGMP)
- Protocol Independent Multicast Protocol (PIM), including PIM Dense Mode, PIM Sparse Mode, and PIM Dense-Sparse Mode
- Open Shortest Path First (OSPF)
- Routing Information Protocol (RIP) version 2
- Virtual Router Redundancy Protocol (VRRP)

Multiprotocol Label Switching (MPLS)

- Label Distribution Protocol (LDP)
- Constraint-based Routing Label Distribution Protocol (CR-LDP)
- Resource ReSerVation Protocol – Traffic Engineering Extensions (RSVP-TE)

Layer 2 Protocols

- Asynchronous Transfer Mode (ATM)
- Cisco HDLC
- Ethernet
- Frame Relay (FR)
- Layer 2 Tunneling Protocol (L2TP)
- Multilink Frame Relay (MLFR)

- Multilink Point-to-Point Protocol (MLPPP)
- Point-to-Point Protocol (PPP)
- PPP over Ethernet (PPPoE)

Security Protocols

- IP Encapsulating Security Payload (ESP)
- IP Authentication Header (AH)
- Internet Security Association and Key Management Protocol (ISAKMP)
- Internet Key Exchange (IKE)

Simple Network Management Protocol (SNMP)



Note: For detailed information on any protocol, see the configuration guides.

Known System Behavior

This section briefly describes ERX system behavior and related issues. In some cases the behavior differs from non-ERX implementations; in others the behavior is included to emphasize how the system works.

ATM

- The ERX system will decrease the maximum number of subscribers allowed when the memory limit is approached on ATM modules with 128 MB of memory. This might happen in either of the following circumstances:
 - > In oversubscription configurations when 16k ATM circuits are configured for dynamic subscribers, 8k IP/PPP/PPPoE/ATM interfaces are active, and another 8k subscribers continue their attempts to log in.
 - > In endurance tests with 8k PPP/PPPoE dynamic interfaces that have elaborate policies attached to them.

Work-around: Upgrade the module to 256 MB.

BGP

- The following message might be displayed under certain conditions:

```
bgpConnections (default,0.0.0.0): Error accepting inbound  
TCP connection
```

The message is generated when an unconfigured peer attempts to establish a TCP session with an ERX system and a valid route to the source address of the peer is absent from the router's routing table.

If a valid route exists in the routing table, the following message is displayed when an unconfigured peer attempts to establish a TCP session with an ERX system; X.X.X.X is the source address of the unconfigured peer:

```
NOTICE 08/29/2001 16:50:11 bgpConnections (default,X.X.X.X):  
Inbound connection refused - no peer X.X.X.X configured in  
core
```

B-RAS

- The OC3 module (non-ASIC, dual-port) does not support rate shaping of egress traffic for VP tunnels. It does support rate limiting, where traffic exceeding the rate is dropped. When traffic is dropped, the link bandwidth corresponding to the discarded packets is not reallocated to other tunnels or individual VCs, resulting in unused bandwidth.
- Pool groups are not supported; although the **ip local pool group** command appears in the CLI, it is not supported.

CLI

- The **show config** command normally takes a long time to finish for extremely large configurations. If you specify a search string (via the **begin**, **exclude**, or **include** options) with the command for a string that is not present in the configuration, then the CLI session appears to be busy for a prolonged period. The CLI filtering feature for **show** commands does not speed up execution of the command.
- If you remove a standby SRP module and fail to issue the **slot erase** command, then the ERX system cannot guarantee that the SRP modules were synchronized. In this situation, the ERX system properly will not execute a simple **reload** command. To reload the router you must now do either of the following: [Defect ID 42219]
 - > Issue the **reload force** command.
 - > Issue the **slot erase** command followed by the **reload** command.

Ethernet

- When counting bits per second on a Fast Ethernet or Gigabit Ethernet interface, the ERX system includes 12 bytes for interpacket gap, 7 bytes for preamble, and 1 byte for start frame delimiter, for a total of 20 bytes (160 bits) per packet more than some non-ERX systems. This value therefore shows the total bandwidth utilization on the interface, including both data and overhead.

Hardware

- There is a very small chance that some line modules could have an improperly modified keying block that prevents the module from proper seating in the top slot of an older ERX-700 chassis.

Work-around: Remove the keying block to insert the module in the top slot, or insert the module in a different slot.

- Because the FE-2 line module connects directly to its I/O module rather than to a midplane, installing one module can unseat the other module.

Work-around: Ensure that the screws fastening the I/O module to the chassis are tight to prevent separation between the modules and a resulting poor connection.

- Use the Ethernet port on the SRP I/O module only as a system management port. If you must route Ethernet on a 10/100BaseT port, you must do so on an FE-2 or FE-8 I/O module.

IP

- ASIC line modules can accommodate routing tables of up to 2M entries. Non-ASIC line modules are limited to 100K entries (although more routes could still work because a routing table of up to 1M entries could be compressed to 100k or fewer nonconsecutive routes). See *ERX Installation and User Guide, Appendix B, Module Specifications*, for information on which modules are ASIC and which are non-ASIC.
- When you issue the **show ip forwarding-table** command for a particular slot, it is normal and appropriate behavior if the Status field indicates Valid while the Load Errors field is increasing daily for that VR. The Load Errors field records any failed routing table distribution attempt as an error. Attempts can fail for many reasons during normal operation; a failed attempt does not necessarily indicate a problem. It is normal to see many Load Errors per day. If the Status field does not

indicate Valid, then the routing table distribution has failed constantly for that VR, and a real problem exists.

IP Multicasting

- PIM has gained general acceptance among a large number of multicast-enabled networks. We recommend that you use PIM rather than DVMRP for applications that are not otherwise required to run DVMRP.

L2TP

- If you create an L2TP destination profile *profileName*, establish tunnels with the profile, and then remove the profile, you cannot subsequently create another destination profile using that same *profileName* until all the tunnels drain from the previous instance of this destination profile. If you do not wait, the ERX system displays a message similar to the following:

```
l2tp: Discarding incoming sccrp from vr default, remote
      address 192.168.100.1 - no destination profile.
```

If you do not want to wait for the tunnels to drain, you can simply use a different name for the destination profile. [Defect ID 32973]

Layer 2 over MPLS

- You can enter the **router interface tunnel mpls:baseTunnel** command in any virtual router or VRF context. However, the configuration takes place in the virtual router in which the base tunnel resides.

You must enter the **mpls-relay remoteAddress** command in the virtual router where the *remoteAddress* can be reached; that is, in the virtual router providing core connections. This means, for example, that you cannot enter the command in a VRF.

MLPPP

- An ERX system deployed as an LNS where the tunnel sessions are using MLPPP can have only a single Tunnel Service module installed. Having more than one TSM installed in this configuration leads to incorrect operation of the ERX system.
- The **ppp chap-challenge-length** command is not currently supported for MLPPP. [Defect ID 32040]

MPLS

- The ERX system does not support multiple FEC elements in a single label mapping message, which is the default behavior for Juniper Networks M-series routers. When communicating with an M-series router that uses the default setting, an ERX system might display the following error message:

```
ERROR 04/09/2003 19:46:00 mplsGeneral (default):
  LDPGetFecElemsFromTlv:too many FEC Elements in TLV.
  Maximum number supported is 1.
```

Work-around: Use the **set protocol ldp deaggregate** command on the M-series router to specify that the router not include multiple FEC elements in a single label mapping.

- Do not enable OSPF on any unidirectional interfaces (such as an MPLS tunnel) because it will never be able to form an adjacency. If the range specified by the **network area** command includes an address on an interface that is being referred to by unnumbered interfaces, all of the unnumbered interfaces will begin trying to form adjacencies. If this behavior is not intended, you must reevaluate the interface assignment or the range specified by the command.

Policy Management

- Traffic shaping is not supported on non-ASIC modules. For information on which modules are ASIC or non-ASIC, see *ERX Installation and User Guide, Appendix B, Module Specifications*.

QoS

- A dynamic IP interface can have a QoS profile attached by RADIUS. For example, if configured by RADIUS, the **show ip interface** command might show the following:

```
Attached QoS profile: Strict-qos
```

However, if the profile is configured statically, the QoS profile would be attached to the 1483 subinterface, and the attachment would be displayed by the **show atm subinterface** command rather than **show ip interface**.

- In Release 4.0.0 and higher releases, ATM VCs are not shaped to the configured rate if you use the **atm-vc node scheduler-profile** command to configure VC shaping and your QoS configuration involves ATM VPs shaped in the SAR.

This command does shape VCs correctly if you have configured the SAR for per-port queuing via the **qos-mode-port** command.

However, per-port queuing is recommended mostly for configurations with strict-priority scheduling. You cannot issue the **qos-mode-port** command if you have configured the SAR for VP tunnel shaping, because the command disables all ATM/SAR shaping configurations.

Work-around: Configure shaping on the IP interface, rather than on the VC, via the **ip node scheduler-profile** command. The **ip node scheduler-profile** command is added to the new QoS profile and any existing **atm-vc node** commands are left in place. The **ip node scheduler-profile** command is also compatible with the default mode of operation of the SAR. Using the **ip node scheduler-profile** command works well in configurations with one IP interface per VC, which is the case except for when multiple PPPoE clients are stacked above a single VC.

System

- In a router with a redundancy group that does not span quadrants (for example, a three-slot redundancy group that spans slots 0, 1, and 2 in a 14-slot chassis), the potential bandwidth of the redundant module is erroneously included in the quadrant bandwidth calculation. The **show utilization** command might indicate that the bandwidth is exceeded for modules in that group. [Defect ID 31034]
- When you copy the running configuration to NVS, the ERX system checks whether it has available space equal to at least twice the size of .cnf file. If the space is insufficient, you cannot complete the copy. [Defect ID 40655]

Work-around: Make sufficient space on the NVS by deleting release or .cnf files.

- If you upgrade the system software on a system with redundant SRP modules, the secondary SRP module does not run the new software until it reboots. If, before it is booted, you issue the **srp switch** command or the primary SRP module fails, the secondary SRP module will run with the old release when it takes control.
- The **show version** command displays how long the system (meaning the chassis) has been running; it does not reflect the uptime of a particular SRP module.

Known Problems and Limitations

This section identifies the known problems and limitations in this release. For more information on known problems that were discovered at customer sites, you can go to the Customer Support Center Web site at <https://www.juniper.net/support/csc/kb.html>, log in to the ERX Knowledge Base, enter the defect number in the Search By Keyword field, and click Search.

ATM

- If you issue the **service manual-commit** command to place the router in Manual Commit mode, the router might misinterpret subsequent execution of the **show configuration** command as actual configuration changes that require commitment to NVS. [Defect ID 48058]

Work-around: Issue the **write memory** command.

- When you reload an ATM line module that is configured with NBMA circuits as passive OSPF interfaces and has established OSPF adjacencies and IBGP peers (configured on Gigabit Ethernet interfaces), the transmission of OSPF hello packets may be affected until all the NBMA interfaces have initialized. [Defect ID 46157]

Work-around: Either remove the passive OSPF interface statements on the NBMA interfaces or statically configure the OSPF cost on the NBMA interfaces.

- If you configure 1:5 or 1:4 redundancy groups with ATM modules and more than 3 modules are active in the redundancy group, the ERX system might exhibit poor forwarding and control performance when an active line module fails over to a standby module. [Defect ID 43257]

B-RAS

- If the ERX system is under a heavy load, the **show profile** command might take longer than usual to execute. [Defect ID 41738]

Work-around: You can either delay examination of profiles until the system is less busy or you can save a copy of the profile to a text file off the ERX system.

CLI

- The **show subsystem** and **exclude-subsystem** commands show the TSM as an OC12 module. [Defect ID 36661]
- You cannot use an underscore character (`_`) in an MPLS tunnel name unless you enclose the entire name in quotes. [Defect ID 31291]

Documentation

- Incorrect DHCP Local Server Configuration Example

The default router that you configure must be on the same subnet as the local server pool IP addresses. The configuration example is in the *Configuring the DHCP Local Server* section in *ERX Broadband Access Configuration Guide, Chapter 5, Configuring DHCP Local Server*.

In Steps 4 and 5, local address pools and the default router are configured as follows:

```
host1(config-dhcp-local)#network 10.10.0.0 255.255.255.0  
host1(config-dhcp-local)#default-router 10.10.1.3
```

A correct example would show either a network mask of 255.255.0.0 for the first command, or an IP address for the default router of 10.10.0.3.

- Units Incorrect for **show isis spf-log** Command

ERX Routing Protocols Configuration Guide, Vol. 1, Chapter 10, Configuring IS-IS, incorrectly states that the Duration field displays number of milliseconds to complete the SPF run. The field instead displays the value in seconds; for example 0.160.

- The L2TP documentation incorrectly states that you do not need to assign a Router ID if you configure a source address. You must explicitly assign a router ID to a virtual router rather than using a dynamically assigned router ID. A fixed ID is required because every time the ID changes, L2TP must disconnect all existing tunnels and sessions that use the old ID. If you use a dynamically assigned router ID, the value can change without warning, leading to failure of all L2TP tunnels and sessions. Also, the system could dynamically assign a router ID that is not reachable by the L2TP peer, causing a complete failure of L2TP. You must set the router ID even if you specify a source address in the domain map or a local address in the host profile.

- The *ERX Command Reference Guide* incorrectly describes the **aaa timeout** command:
 - > The correct value for the maximum session timeout that you can specify for B-RAS PPP user is 1814400 seconds (21 days), not 2678400 (31 days).
 - > If you enter a timeout value that is not a multiple of 60 seconds; the system accepts the value as is and does not round it to the nearest minute.
 - > If you enter a value that is out of range, the CLI displays a warning message; the values are not rounded to be within the accepted range.
 - > Although the CLI does not enforce the rounding rules stated in the guide for values you enter, the timeout values can be provided by RADIUS. The range is not enforceable on such values. PPP and L2TP will round these timeout values from RADIUS as follows:
 - If the timeout is less than the minimum, it is rounded up to the minimum.
 - If the timeout is greater than the maximum, it is rounded down to the maximum.
 - If the timeout is not a multiple of 1 minute, it is rounded to the nearest minute.

HDLC

- If you attempt to increase the CRC to a value that exceeds the 10,000-byte maximum after the MRU/MTU size is set, the **crc** command will fail. For example, if the MTU for a POS module is set to 9998, attempting to increase the CRC value from 16 to 32 would result in a combined value that exceeds 10,000 bytes, and will therefore cause the **crc** command to fail. [Defect ID 50101]

Work-around: Set the MRU or MTU to a value of 10,000 minus the new CRC value before you change the CRC size.

IP

- If you issue the **show arp** command when there is a large ARP table, OC3 line module CPU utilization can spike to 80-90%. [Defect ID 33126/43091]

Work-around: Issue the **show arp** command for a particular interface rather than for the entire module.

- A ping across an ECMP link with the DF bit set and the data size larger than the MTU size of one of the ECMP paths may fail because the ICMP CRC of the ping is corrupted. [Defect ID 41795]

Work-around: Configure the same MTU size on all of your ECMP paths and do not set the DF bit.

- The FE-2 module counters might display incorrectly for the In Fabric Dropped Packets statistic when tunneled traffic is forwarded across the module. [Defect ID 27308]
- If you have enabled ipInterface logging at a priority of debug, the acknowledgement that an interface has been deleted from the line modules can return to the SRP module after the layers beneath IP have deleted their interfaces. Consequently, the original name of the interface cannot be resolved or displayed in the log, and the system instead displays the ifIndex of the IP interface. [Defect ID 32624]

Work-around: This behavior has no functional effect other than that the log is misleading. However, previous log events will have logged that the interface deletion was beginning.

- The **ip route permanent** command does not work properly. [Defect ID 34303]

Work-around: You can issue the **ip alwaysup** command to prevent the route from being removed from the IP routing table after the interface is shut down.

- IP interface statistics become inconsistent when a slot is reset, because some traffic (such as control traffic) might be destined for the SRP module and is therefore counted elsewhere. [Defect ID 26697/2445]

L2TP

- The L2TP documentation incorrectly states that you do not need to assign a Router ID if you configure a source address. You must explicitly assign a router ID to a virtual router rather than using a dynamically assigned router ID. A fixed ID is required because every time the ID changes, L2TP must disconnect all existing tunnels and sessions that use the old ID. If you use a dynamically assigned router ID, the value can change without warning, leading to failure of all L2TP tunnels and sessions. Also, the system could dynamically assign a router ID that is not reachable by the L2TP peer, causing a complete failure of L2TP. You must set the router ID even if you specify a source address in the domain map or a local address in the host profile.

MLPPP

- The **ppp chap-challenge-length** command is not currently supported for MLPPP. [Defect ID 32040]
- Multilink PPP does not detect illegal bundle members. [Defect ID 3012]

Work-around: Display the local and peer endpoint discriminators via the **show mlppp interface full** command to help debug the problem.

MPLS

- If LSPs are announced into IGP, then the IGP routes cannot be used for multicast RPF checks, because LSPs are unidirectional. [Defect ID 28526]

Work-around: Configure static RPF routes with native hops if LSPs are auto-route announced to IGP.

NTP

- If you issue the **no ntp enable** command after one or more NTP server associations have already been configured, the association configuration disappears from the output of the **show configuration** command. [Defect ID 47036]
- If you configure NTP with a master stratum number, the configuration is not displayed by the **show configuration** command. [Defect ID 47012]
- The source address for outgoing NTP packets is not updated with the configured address. [Defect ID 45619]
- The **ntp server** command does not support the **key** option. [Defect ID 28963]

QoS

- QoS is not yet supported for L2TP LACs. [Defect ID none]
- In Release 4.0.0 and higher releases, ATM VCs are not shaped to the configured rate if you use the **atm-vc node scheduler-profile** command to configure VC shaping and your QoS configuration involves ATM VPs shaped in the SAR. [Defect ID none]

This command does shape VCs correctly if you have configured the SAR for per-port queuing via the **qos-mode-port** command. However, per-port queuing is recommended mostly for configurations with strict priority scheduling. You cannot issue the **qos-mode-port**

command if you have configured the SAR for VP tunnel shaping, because the command disables all ATM/SAR shaping configurations.

Work-around: Configure shaping on the IP interface, rather than the VC, via the **ip node scheduler-profile** command. The **ip node scheduler-profile** command is added to the new QoS profile and any existing **atm-vc node** commands are left in place. The **ip node scheduler-profile** command is also compatible with the default mode of operation of the SAR. Using the **ip node scheduler-profile** command works well in configurations with one IP interface per VC, which is the case except for when multiple PPPoE clients are stacked above a single VC.

SNMP

- During line module failover-and-reversion testing, the SNMP description that was “OC3 quad port, ATM” before failure becomes OCX ATM. [Defect ID 51364]

Work-around: Reload the router or switch the SRP modules to reinstate the correct SNMP description.

Syslog

- If you enable engineering logs and set the control network logs to a level of “notice” or lower (down from the default of “error”), you might see erroneous controlNetwork log messages like the following that are generated due to SNMP polling on line modules (correctly) detecting no fabric: [Defect ID 43168]

```
NOTICE 09/01/2002 18:47:52 CEST controlNetwork (slot 11):  
Control Bus Master slave error 0x5 while accessing slot
```

System

- If you define an interface and then apply a description to it, you cannot then apply a profile to the interface. [Defect ID 42971/42746]

Work-around: You must use the following sequence:

- a Define the interface.
 - b Apply a profile to the interface.
 - c Apply a description to the interface.
- You cannot delete the ipInterface log after you delete the corresponding IP interface. This does not prevent you from adding

filters to other interfaces nor does it prevent you from adding a filter to the same interface if you recreate it after deletion. [Defect ID 34842]

Work-around: Remove the filter before you remove the interface. Alternatively, if you remove the interface first, then you must remove all filters associated with all IP interfaces.

- In Interface Configuration mode for a major interface, the CLI displays options for protocols not supported by that interface type. [Defect ID 33307]

Resolved Known Problems

This section lists significant known problems that have been resolved in the current release. For more information on resolved problems, log in to the ERX Knowledge Base on the Customer Support Center website at <https://www.juniper.net/support/csc/kb.html> and search on the problem report number.

AAA

- The **show subscribers** command uses the wrong interface value for nontunneled users. [Defect ID 51732]
- SRP module reset type: panic task: radius1 file:radiusAuth.cc line: 6017 - when AAA duplication is turned on. [Defect ID 49692]
- SRP module reset: Panic in task: aaaServer file: osSemaphore.cc, line 51 when deleting radius server. [Defect ID 49408]
- Unisphere still used instead of Juniper in aaaServerGeneral log messages. [Defect ID 48191]

ATM

- ATM VC-per-VP configuration is not applied correctly after a line module failure. [Defect ID 51585]
- Line module reset with a panic in file: 83DataService.cc line: 5606 task: scheduler. [Defect ID 51417]
- NBMA does not seem to be working properly: Only 2 out of 3 destinations receive a copy of packet. [Defect ID 50642]
- ERX router reset with a processor exception 0x300 (data access), task: telC7712. [Defect ID 50342]
- A **slot erase** command failure: % configuration purge failed. [Defect ID 49474]

- Certain ADSL modems fail to connect to ERX router; failure to create PPPoE interfaces. [Defect ID 48291]
- Incorrect ifOperStatus integer reported via SNMP. [Defect ID 49028]
- InARP packets are discarded on dynamic interfaces. [Defect ID 47414]
- F5 OAM loopback cell processing VCC. [Defect ID 48444]
- RFC1577 Lucent CellPipe DSL CPE sends inArp packet to ERX system with invalid source hw type/length value. [Defect ID 46706]
- Line module reset: reset type: panic, task: scheduler file: 83DataService.cc line: 8260 last errno: 0. [Defect ID 46506]
- The **baseline interface atm** command does not reset OAM VC statistics. [Defect ID 47001]

BGP

- BGP peer OID 1.3.6.1.2.1.15.3.1.14 (bgpPeerLastError) returning incorrect value. [Defect ID 50769]
- More-specific prefixes within an aggregate are being advertised to the VPNv4 peer. [Defect ID 46984]
- MIB walk of the bgpPeerIdentifier gets stuck in loop. [Defect ID 48588]
- Import map configured in one VRF affects the other VRF. [Defect ID 48084]

CLI

- Arrow key on command line is not behaving correctly. [Defect ID 51590]
- Cannot remove files of type .scr from /incoming and /outgoing directories. [Defect ID 44240]
- Percent running time process statistics displayed by the **show process cpu** command are incorrectly calculated. [Defect ID 27865]
- If you specify a directory path of more than 255 characters for the **dir** command, the SRP module can reset. [Defect ID 42486]
- System shutdown related command (**reload, halt, srp switch**) becomes stuck in vicious cycle due to cache flush and unsynchronized. [Defect ID 45128]
- Telnetting to an ERX system will cause the dynamic and committed configuration to become unsynchronized. [Defect ID 46469]

- In the output of the **show process** command, some columns wrap within the column. [Defect ID 50147]
- On rare occasions, if you delete a virtual router while another user is configuring that VR, the SRP module could reset. [Defect ID 42564]
- Limit the name of map lists to no more than 31 characters. A longer name can cause the router to reset. [Defect ID 47196]
- SRP module resets with panic, task: telC15, file: osLog.cc, line: 4316. [Defect ID 48209]

Core Dump

- Spurious, invalid line module core dump produced after a normal reset. [Defect ID 50664]
- 2 GB SRP module core dump takes 2 hours to complete. [Defect ID 49864]
- Core dump from standby SRP module fails due to the filename is too long. [Defect ID 46146]
- A core dump to local NVS fails on 2 GB system with less than 500 MB memory. [Defect ID 47455]

DHCP Relay

- In a DHCP relay dynamic interfaces environment, only one bridged user per VC is successfully installed. [Defect ID 50118]

Diagnostics

- TSM module stuck in booting after diagnostic failure. [Defect ID 51392]
- SRP module switching test results in the standby SRP module exhibiting a diagnostics failure even though the switchover took place. [Defect ID 44467]

DHCP Local Server

- The **show ip dhcp-local bindings** command does not report all information about a client. [Defect ID 44284]

DHCP Relay

- Log message -Too many saved access routes (max is 40000): some routes will be lost. [Defect ID 48673]

Dynamic Interfaces

- Cannot delete profile that contains the **ip igmp** command. [Defect ID 48509/38866]
- Very long profile names (> 150 characters) are accepted in configuration but turn into junk after a reload. [Defect ID 49839]

Ethernet

- ERX router LNS subscriber login problems. [Defect ID 49860]
- Gigabit Ethernet with SFP IOAs shows no link light while the **show int gi** command reports link up. [Defect ID 48361]
- GE stops forwarding packets when a Cisco GSR is reloaded. [Defect ID 48663]

Firmware

- Line module reset: ping failure threshold exceeded resets. [Defect ID 50736]

Forwarding

- OC3-ATM line module reset with a panic, arg (0xa), file: fc2QosAgent.cc, line: 3430, task: scheduler. [Defect ID 51040]
- FC reset initiated when ARF returns out-of-range value. [Defect ID 51746]
- Reassembly failures on TSM in L2TP configuration with an ERX system as LNS. [Defect ID 51533]
- FC Recovery type crash incorrectly recorded for 1st-generation line modules. [Defect ID 50925]
- 10-Gbps fabric discards cells. [Defect ID 50577]
- Line module reset: Ping failure threshold exceeded reset when forwarding more data than the EFA can process. [Defect ID 50687]
- Problems forwarding traffic on a 4-port OC3 module. [Defect ID 50142]
- An interface configured with a rate limiting policy stops forwarding traffic at random intervals. [Defect ID 49678]
- Panic in geFcDriver.cc line 802 when shutting interface; subsequent halt in IP. [Defect ID 49951]
- ATM throughput performance reduction in 3-4-1. [Defect ID 50353]

- FC resets cause FCs and ICs to be rebooted. [Defect ID 45627]
- IP traffic statistics inconsistencies with ICMP redirects. [Defect ID 49427]
- Line module fragmentation does not work after a fast reset. [Defect ID 48996]
- Need ability to **clear df-bit** because **ignore-df-bit** generates packets with both dont-fragment and more fragment bits set. [Defect ID 48563]
- Line module reset with exception 0x700 (program), task: Ingress FC[2] after upgrading. [Defect ID 45778]
- PPPoE clients cannot log into the ERX system. [Defect ID 48433]
- Line module reset with processor exception 0x300 (data access) task: Egress FC[1]. [Defect ID 48165]
- Payload data corrupted when fragmenting multicast packets. [Defect ID 47211]
- The CT3 module resets with random exception 0x100. [Defect ID 47388]
- DS3-4 ATM module resets continuously after downgrade from 5.1 to 4.1.1. [Defect ID 47588]
- Problem in the mechanism currently used to reset the SAR can cause a reset. [Defect ID 45634]

FTP Server

- FTP to router resulted in file with 0 byte size. [Defect ID 46913]
- If the ERX system experiences a SYN attack on the FTP port while the FTP server is enabled, the system subsequently does not accept Telnet sessions. [Defect ID 42834]

IP

- Receiving log messages: ipProfileMgrEngineering ():
AaaInfo::setLocalInterface: address/mask format invalid : Loopback 2.
[Defect ID 51479]
- SRP module reset with processor exception 0x68616c74 (halt), task:
ip_RxData_1 - deadlock. [Defect ID 50361]
- The **show ip route slot** command does not display ECMP routes.
[Defect ID 50815]

- If you have a large B-RAS configuration (4,000 PPPoA connections) on a T3 ATM module combined with a CT3/T3 I/O module (sometimes referred to as a 3-port T3 ATM line module and I/O) and the T3 ATM module reloads while you are running Telnet, the Telnet sessions may drop. [Defect ID 31618]
- Executing the ipAgent dump debug command from the line module shell can result in a reset of the line module. [Defect ID 51104]
- The **show ip route slot** command fails although the route does exist on the line module. [Defect ID 51112]
- SRP module reset with exception in task telC3 while adding and deleting 1023 VRs with multiple subinterfaces across different LCs. [Defect ID 50521]
- SRP module reset with panic in task: ip_Ctrl_1AD file: ar1IpEngine.cc line: 7727, when adding and deleting VRFs. [Defect ID 50369]
- Line modules get stuck in “unknown” state after disabling and attempting to erase a slot via SNMP. [Defect ID 47088]
- System reset with ic1Fc2IngressCfecApi.cc line 112 validateFecType() PANIC. [Defect ID 44902]
- Route table distribution can leak ARF memory on the line module. [Defect ID 49558]
- SRP module reset: panic, file: iParserRouter.cc, line: 92, task: telC4 when entering **ip vrf forwarding vrfabc** command in a VRF. [Defect ID 49193]
- The syntax for **show virtual-router** command is inconsistent from help to actual CLI. [Defect ID 46703]
- The router does not accept a next-hop address as part of a RADIUS returned framed IP route. [Defect ID 47968]
- No Telnet session possible when lines appear to be available. [31564]
- SRP module reset (ar1IpEngineRouteTable.cc, line 3045) on L2TP LAC after bouncing line modules on L2TP LNS. [Defect ID 47078]
- SRP module resets with processor exception 0x300 (data access) task: ip_DataCtrl. [Defect ID 47770]
- Line module reset with benign panic instead of logging a message. [Defect ID 39090]
- IP interface statistics incorrectly increments Received Header Errors. [Defect ID 47231]

- The show configuration command hangs the console after issuing either the **ip address-pool local** or **show ntp stat** commands. [Defect ID 47294]

IP Multicasting

- Initial multicast packets for a multicast stream may be dropped by the egress line module. [Defect ID 50812]
- Line module reset in ipTunnel.cc on line 1391 in task scheduler. [Defect ID 49442]
- SRP module reset with panic in file: mgmtCtree.cc, line: 1779, task: mgmt129. [Defect ID 47095]
- SRP module reset with panic, task: mgmt219, file: osPool.cc, line: 525 after issuing the command “<code>no virtual-router</code>” while multicast streams are being forwarded. [Defect ID 46867]
- MGMTM reset in processOutLocalEvent on reload slot. [Defect ID 40835]
- Console hangs after disabling/enabling multicast routing. [Defect ID 48156]
- SRP module resets with panic in task: pim1 file: mgmtEvents.cc (disable/enable multicast). [Defect ID 48273]
- The SRP module resets inappropriately after deleting the PIM RP address of a loopback interface and reconfiguring the same address with PIM. [Defect ID 47178]

IS-IS

- IS-IS does not correctly install all next hops of an ECMP set. [Defect ID 51010]
- SRP module reset with a panic, arg (0x28) file: ipTypes.cc line: 143 task: isis1r1. [Defect ID 51321]
- Panic in task isis1r2 file isis.cc after **mpls disable** command issued. [Defect ID 49988/50033]
- The command **mpls traffic-eng router-id loopback0** disappears from the IS-IS configuration after you change the IP address of loopback 0. [Defect ID 49356]

L2TP

- L2TP scaling test results in line module reset with panic in task: scheduler / file: 1FcL2tpDriver.cc / line: 1059. [Defect ID 43692]
- SRP module reset: reset type: panic; task: l2tp; file: tpDestination.cc. [Defect ID 49138]
- An idle timeout acts like a session timeout when passed via ERX LAC. [Defect ID 47942]
- Debug code to dump l2tpShowDebugStats and l2tpShowDebugEvents after a failed tunnel or session. [Defect ID 48577]
- L2TP sessions might stay in Lower Layer Down state and not be cleared. [Defect ID 45067]

MPLS

- Transit LSP not built after OSPF is changed to use ECMP. [Defect ID 51060]
- MPLS LSPs not built over VLANs after a topology change. [Defect ID 50886]
- SRP module reset: processor exception 0x68616c74 (halt), task: system. [Defect ID 49461]
- LDP sessions fail to stay up when processing large amounts of LDP data. [Defect ID 49444]
- LDP sessions down and will not come back up. [Defect ID 49139]
- SRP switch Slot 6 / task: mplsMgr1r1 reset type: exception 0x300 (data access). [Defect ID 48561]
- LDP needs to include more information for TCP connect failure. [Defect ID 49043]
- LDP advertised label mappings for routes with null0 as next hop. [Defect ID 49096]
- SRP module resets with exception 0x300 (data access), task: mplsMgr1r1, LDPConfigGetFECInfo due to show mpls ip binding | i release. [Defect ID 47973]
- LDP sessions would not successfully negotiate, BGP connection with peer down, forwarding table contains unresolved route. [Defect ID 48732]
- OSPF routes pointing to MPLS minor interfaces. [Defect ID 48357]

OSPF

- OSPF route selection for external type 1 routes is incorrect. [Defect ID 50810]
- The **show ip ospf database external** command does not display all external routes associated with specific link state-id. [Defect ID 51094]
- If you configure OSPF on an interface and then remove it, a **show** command might indicate that OSPF is still running; this is only a display issue and does not affect system behavior. [Defect ID 35641]
- ERX system failed OSPF MD5 authentication when receiving hellos from a Cisco router running Non Stop Forwarding. [Defect ID 46266]
- System reset with panic in ipNextHopInfo.cc line 65. [Defect ID 50093]
- SRP module reset with panic in file: osPool.cc line: 657 task: ospf_OspfMsgQueue, during **no virtual-router** command while removing OSPF configuration. [Defect ID 49683]
- Summary link not advertised into another area after issuing **interface shut/no shut** commands. [Defect ID 49190]
- A system with a 40 Gbps SRP module and 2 GB of memory reset with a panic during a VPN scaling test if the memory location of a neighbor was less than 0x100 or greater than 0x7FFFFFFF. [Defect ID 47447]

PIM-SM

- Multicast (PIM-SM) ERX router doesn't switch from a shared tree to the SPT after the (S,G) has been joined, left, and joined again. [Defect ID 50151]
- The SRP module reset with an exception 0x300 (data access, task: pim406 upon receipt of <*, *, RP> joins. [Defect ID 47007]
- The SRP module reset with a panic due to wrong prefix length in received PIM-SM packet. [Defect ID 48778]

Policy Management

- Functions as designed: Baselineing is not supported for policies applied in profiles. [Defect ID 35945]
- After upgrade from 3.2.3p1-5 to 3.2.3p2-5, the precedence value of 100 is no longer displayed by the **show configuration include-defaults** command. [Defect ID 46231]

- Ascend data filter will have “Admin State” and “Operational State” as disabled. [Defect ID 49102]
- Policy baseline enable not stored in nonvolatile memory. [Defect ID 36037]
- Unable to upgrade from 4.1.1p0-2 to 5.0.1b0-12 & 5.1.0b1-10, resulting in system panic on policyMgr. [Defect ID 48600]
- Policy does not handle redundant rules in a consistent manner. Eclipsing the second of two similar rules using the same CLACL is removed. [Defect ID 46804]
- A classifier list with several conditions may incorrectly classify traffic. [Defect ID 45740]

PPPoE

- FE-8 module reset (ic1Fc2L2Api.cc, line 1000) on LAC while bringing PPPoE/L2TP client connections up and down. [Defect ID 47284]

QoS

- The SRP module reset with a processor exception 0x300 (data access), task: qos. [Defect ID 46893]
- Line module reset: panic in task: scheduler; file: fc2QosAgent.cc; line: 1485. [Defect ID 48821]
- QoS can't attach profiles to B-RAS interfaces. [Defect ID 48942]
- Memory leak in QoS when bouncing B-RAS users. [Defect ID 48828]

RADIUS

- ERX system sending Accounting-Stop packet following SRP module switch. [Defect ID 51781]
- SRP module reset: processor exception 0x300 (data access), task: radiusClient_rad. [Defect ID 49622]
- SRP module reset (exception 0x400, task: radiusClient_rad) on L2TP LNS as soon as scaling test began. [Defect ID 48350]
- SRP module resets with panic, file: osPool.cc @ line 855, task: radius1. [Defect ID 47044]

Redundancy

- Log Message: "redundancy (): Board in slot 1 is incompatible with spare in slot 0" is generated when standby line module is not installed. [Defect ID 50359]
- Adjacent redundancy groups do not work in shadow chassis. [Defect ID 50075]
- System reset with a panic in task system; file; 1RedundancyDb.cc on line 814. [Defect ID 46583]

RIP

- SRP module reset with exception 0x300 (data access) task: rip_MsgQ_8000000. [Defect ID 51558]
- SRP module reset: panic, file: ripSummary.cc, line: 165, task: rip_ripMsgQueue. [Defect ID 49487]
- RIP hold timer in ERX RIP implementation causes network problems and breaks RFC 2453. [Defect ID 48861]

Routing Policy

- SRP module stuck in booting following upgrade from 4-0-3p0-7 to 4-1-2p0-5. [Defect ID 51775]

SDX

- SRP module reset with exception 0x300 (data access), task: cops_DataCtrl_1. [Defect ID 51909]
- SRP module reset with exception in task: sscClient_Data when running config script. [Defect ID 49711]
- SDX client does not contain pppLoginName or radiusClass variables for dynamic ATM authenticated bridged interface. [Defect ID 49624]
- The ERX system is not sending the nasPortId speed through COPS connection of GRE tunnel interface. [Defect ID 42530]
- DHCP client intermittently gets into state in which it does not get address for 30 minutes due to internal cleanup/deletion of policy lists not taking place before the token iterator was deleted. [Defect Id 49805]

SNMP

- SRP module reset with processor exception 0x300 (data access), task: agent1, pc: 0x3be5e50 -> bcrBGO. [Defect ID 51463]
- Agent snmp_DataNctrl_1 and agent snmp_DataNctrl_2 are in a deadlock state, which caused the vty sessions to hang. [Defect ID 51310]
- Panic reset in snmpRouterAgentNv.cc line 1962 in booting following upgrade from 4-0-3p0-7 to 4-1-2p0-5. [Defect ID 51924]
- MIB variable usdMplsIfMinorTunnelRetryInterval is not set when interface created using SNMP. [Defect ID 44430]
- Functions as designed: Passwords are not displayed in CLI **show** command output after an SNMP user is created. [Defect ID 39693]

SONET

- The SRP module reset with a panic in file: RouterAgentV3.cc line: 3793 task: snmp_DataNctrl_1 by configuring snmp trap sonet. [Defect ID 46597]
- ATM SONET bit error counters are not incremented for ports 1, 2, and 3 of 4xOC3-ATM. [Defect ID 48454]

System

- Router reset with a panic in file 1QueueManager.cc task bridge__A2000000. [Defect ID 45284]
- SRP module reset with processor exception 0x700 (program), task: ar1InternalNetwo, pc: 0x38ac284. [Defect ID 42039]
- Standby SRP module's reboot.hty clock off by 5 hrs. [Defect ID 50322]
- Failure of secondary external timing lead (T1:B) causes primary chassis clock state (T1:A) to fluctuate. [Defect ID 51033]
- Test that adds and removes VRF pairs with multiple Telnet sessions to router causes exception: 0x300 in mplsMgr1r2 (LdpEntityInfoP10FiconCrlp). [Defect ID 50220]
- SRP-IC gets wedged. SRP stops receiving and transmitting data. [Defect ID 50127]
- The SRP module reset with a panic in task: system, file: osSemaphore.cc, line: 93 following a recovery attempt of a "Ping Failure Threshold Exceeded." [Defect ID 48300]

- Ping failures resulting in cbus reset of line module do not provide enough information about the cause. [Defect ID 43330]
- The SRP module reset with a panic in task: ip_DataCtrl_2, file: osScheduler.cc, line: 1661. [Defect ID 46848]
- The SRP module reset and watchdog expired while releasing DHCP ATM clients. [Defect ID 46725]
- After deleting multiple virtual routers, not all of NVS cache was flushed. [Defect ID 47165]
- SRP module reset: Hardware watchdog after modifying boot string from shell in redundant system. [Defect ID 49181]
- SRP module reset: panic, arg (0x10000),file: icc.cc, line: 306, task: icLoader. [Defect ID 49183]
- SRP module reset: reset type: processor exception 0x300 (data access), task: cm. [Defect ID 42558]
- Message “ERROR 06/12/2003 15:15:33 fileSystem (): A corrupted file was found on the router” while configuring the router. [Defect ID 48637]
- Lost console and telnet connectivity to three routers. [Defect ID 49641]
- The SRP module reset with a panic in task: cliLocal file: ConfigChecker.cc line: 847. [Defect ID 49685]
- CLI display resulting from failed temperature sensor is unclear. [Defect ID 49727]
- The **show running** command modifies configuration. [Defect ID 46466]
- Files storing halt reset information will not be saved on redundant SRP system. [Defect ID 47596]
- Issuing the **srp switch** command does not force a switchover from the current active SRP module to the standby module. [Defect ID 43924]
- “Error writing to syslog: ...” message generated for an SNMP trap event. [Defect ID 46268]
- The redundancy logic in the Boot ROM accesses the CBUS when it doesn't need to, which could potentially lead to a redundancy conflict and a system reset. [Defect ID 46906]

System Maximums



Table A-1 presents current system maximums for various hardware configurations. The system does not simultaneously support all maximum configurations.

Modules referred to in the table are identified by their physical label. See *ERX Installation and User Guide, Appendix B, Module Specifications* for a list of modules and their identifying labels.

Table A-1 System maximums for the ERX edge router

Feature	ERX-700 series	ERX-1400 series
Fabric size	10 Gbps	10 or 40 Gbps
Chassis per 7-foot rack	6	3
Physical density providing wire speed performance		
Channelized E1 ports per chassis (CE1 Full I/O modules)	100	240
Channelized OC3 ports per chassis (cOC3 STM1 FO I/O modules); wire rate/shared	16/20	32/48
Channelized OC12 ports per chassis (cOC12 STM4 FO I/O modules); wire rate/shared	4/5	4/12
Channelized T3 ports per chassis (CT3/T3 I/O modules)	15	36
Channelized T3 ports per chassis (CT3/T3 12 I/O modules); wire rate/shared	48/60	96/144
Channelized T1 ports per chassis (CT1 Full I/O modules)	120	288
E3 (unchannelized) ports per chassis (CT3/T3 I/O modules)	15	36
E3 (unchannelized) ports per chassis (E3 12 FRAME I/O modules)	48/60	96/144
Fast Ethernet (10/100) ports per chassis (FE-8 I/O modules); wire rate/shared	32/40	32/96

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
Gigabit Ethernet ports per chassis (GE I/O modules); wire rate/shared	4/5	4/12
HSSI ports per chassis (HSSI-3F I/O modules)	15	36
OC3/STM-1 ATM ports per chassis (OC3-4 I/O modules); wire rate/shared	16/20	32/48
OC3/STM-1 POS ports per chassis (OC3-4 I/O modules); wire rate/shared	16/20	16/48
OC12/STM-4 ATM ports per chassis (OC12 STM4 I/O modules); wire rate/shared	4/5	8/12
OC12/STM-4 POS ports per chassis (OC12 STM4 I/O modules); wire rate/shared	4/5	4/12
T3 (unchannelized) ports per chassis (CT3/T3 I/O modules)	15	36
T3 (unchannelized) ports per chassis (CT3/T3 12 I/O modules)	48/60	96/144
Logical density per chassis		
Logical E1s per chassis	1,260	3,024
Logical E3s per chassis	60	144
Logical fractional E1s (DS0) per chassis	10,000	24,000
Logical fractional T1s (DS0) per chassis	10,000	24,000
Logical OC3/STM1 per chassis	20	48
Logical OC12/STM4 per chassis	5	12
Logical T1 per chassis	1,680	4,032
Logical T3 per chassis	60	144

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
Logical density per module combination		
Logical E1s per CE1 line module and supported I/O modules	20	20
Logical E1s per cOCx/STMx F0 line module and supported I/O modules	252 63 per OC3/STM1	252 63 per OC3/STM1
Logical E3s per E3 ATM or E3 FRAME line module and supported I/O modules	3	3
Logical E3s per COCX-F3 line module and supported I/O modules	12	12
Logical fractional E1s (DS0) per cOCx/STMx F0 line module and supported I/O modules	2,000 500 per OC3/STM1	2,000 500 per OC3/STM1
Logical fractional T1s (DS0) per cOCx/STMx F0 line module and supported I/O modules	2,000 500 per OC3/STM1	2,000 500 per OC3/STM1
Logical fractional E1s (DS0) per CE1 line module and supported I/O modules	620	620
Logical fractional T1s (DS0) per CT1 line module and supported I/O modules	576	576
Logical fractional T1s (DS0) per CT3 line module and supported I/O modules	384	384
Logical fractional T1s (DS0) per CT3/T3-F0 line module and supported I/O modules	1992 166 per T3	1992 166 per T3
Logical fractional T3s (DS3) per COCX-F3 line module and supported I/O modules	12	12
Logical fractional T3s (DS3) per T3 FRAME line module and supported I/O modules	3	3
Logical T1s per cOCx/STMx F0 line module and supported I/O modules	336 84 per OC3/STM1	336 84 per OC3/STM1
Logical T1s per CT3 line module and supported I/O modules	84 28 per T3	84 28 per T3
Logical T1s per CT3/T3-F0 line module and supported I/O modules	336 28 per T3	336 28 per T3
Logical T3s per COCX-F3 line module and supported I/O modules	12	12
Logical T3s per cOCx/STMx F0 line module and supported I/O modules	12 3 per OC3/STM1	12 3 per OC3/STM1
Logical T3s per CT3/T3-F0 and supported I/O modules	12	12
Logical T3s per T3 ATM or T3 FRAME line module and supported I/O modules	3	3

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
ATM virtual circuits per chassis	64,000	64,000
ATM virtual circuits per line module		
E3 ATM	4,000	4,000
OC3	4,000	4,000
OCx/STMx ATM (active/configured)	8,000/16,000	8,000/16,000
T3 ATM	4,000	4,000
ATM virtual circuits per port		
E3 ATM	4,000	4,000
OC3	4,000	4,000
OCx/STMx ATM (active/configured)	8,000/16,000	8,000/16,000
T3 ATM	4,000	4,000
ATM VP/VC addresses per line module		
E3 ATM	18-bit	18-bit
OCx/STMx ATM with an OC3-4 I/O module	20-bit	20-bit
OCx/STMx ATM with an OC12 STM4 I/O module	20-bit	20-bit
T3 ATM	18-bit	18-bit
ATM VP tunnels per port, all modules	256	256
Dynamic interfaces		
Active autosensed dynamic interface columns per chassis	32,000	32,000

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
Ethernet density		
VLANs (FE-2 I/O)	4,096	4,096
VLANs (FE-8 I/O)	8,192	8,192
VLANs (GE I/O)	4,096	4,096
VLANs per chassis	32,768	32,768
S-VLANs (FE-2 I/O)	4,096	4,096
S-VLANs (FE-8 I/O) (spread across at least two ports)	8,192	8,192
S-VLANs (GE I/O)	8,192	8,192
S-VLANs per chassis	32,768	32,768
Frame Relay virtual circuits per chassis		
	5,000	12,000
Frame Relay virtual circuits per line module		
CE1	1,000	1,000
COCX-F3	1,000	1,000
cOCx/STMx F0	1,000	1,000
CT1	1,000	1,000
CT3	1,000	1,000
E3 FRAME	1,000	1,000
T3 FRAME	1,000	1,000
Frame Relay virtual circuits per port		
CE1	1,000	1,000
COCX-F3	1,000	1,000
cOCx/STMx F0	1,000	1,000
CT1	1,000	1,000
CT3	1,000	1,000
E3 FRAME	1,000	1,000
T3 FRAME	1,000	1,000

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
HDLC interfaces per chassis	10,000	24,000
HDLC interfaces per line module		
CE1	620	620
COCX-F3	12	12
cOCx/STMx F0	2,000	2,000
CT1	576	576
CT3	384	384
CT3/T3 F0	1,992	1,992
E3 FRAME	3	3
HSSI-3F	3	3
OCx/STMx POS	4	4
T3 FRAME	3	3
X.21/V.35	16	16
MLPPP bundles per chassis	4,000	4,000
PPP sessions per chassis	32,000	32,000
PPP sessions per line module		
CE1	620	620
COCX-F3	12	12
cOCx/STMx FO	2,000	2,000
CT1	576	576
CT3	384	384
E3 ATM	4,000	4,000
E3 FRAME	4,000	4,000
FE-2	4,000	4,000
GE/FE	8,000	8,000
OC3	4,000	4,000
OCx/STMx	8,000	8,000
T3 ATM	4,000	4,000
T3 FRAME	4,000	4,000

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
Forwarding table entries^a		
Chassis with only ASIC modules	1,048,576	1,048,576
Chassis with one or more non-ASIC modules	65,536	65,536
Multicast routes		
Forwarding entries (<S, G> pairs) per chassis ^b	16,384	16,384
Outgoing interfaces ^c per chassis	65,536	65,536
IP network interfaces		
Per chassis	32,000	32,000
Per line module ASIC/non-ASIC	8,000/4,000	8,000/4,000
Routing protocol scaling and peering densities^d		
Routing table entries	500,000	500,000
BGP-4 peering sessions	1,000	1,000
BGP-4 routes (NLRI)	1,500,000	1,500,000
IS-IS adjacencies	150	150
IS-IS routes	10,000	10,000
MPLS CR-LDP LSPs	8,000	8,000
MPLS LDP LSPs	8,000	8,000
MPLS RSVP-TE LSPs	3,500	3,500
OSPF adjacencies	150	150
OSPF routes	10,000	10,000
Performance		
IP packet forwarding (packets per second)	7,500,000	18,000,000

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
Policy and QoS		
QoS queues per ASIC line module	48,000	48,000
Classification rules per policy	512	512
Policy classification (CLACL) entries per line module (ASIC and non-ASIC)	256,000	256,000
Unique policy assignments per line module (ASIC and non-ASIC)	8,159	8,159
Policy egress interface attachments per ASIC line module	8,191	8,191
Policy ingress interface attachments per ASIC line module	8,191	8,191
Policy interface attachments per non-ASIC line module	8,191	8,191
Rate limiters (egress) per ASIC line module	24,575	24,575
Rate limiters (ingress) per ASIC line module	24,575	24,575
Rate limiters per non-ASIC line module	24,575	24,575
Policies statistics blocks (egress) per ASIC line module	65,535	65,535
Policies statistics blocks (ingress) per ASIC line module	65,535	65,535
Policies statistics blocks per non-ASIC line module	32,767	32,767
Software lookup blocks per line module (ASIC and non-ASIC)	1,023	1,023

Table A-1 System maximums for the ERX edge router (continued)

Feature	ERX-700 series	ERX-1400 series
VPN/ tunnels		
DVMRP (IP in IP) tunnels per chassis	4,000	4,000
DVMRP (IP in IP) tunnels per Tunnel Service Module	4,000	4,000
GRE tunnels per chassis	4,000	4,000
GRE tunnels per Tunnel Service Module	4,000	4,000
IPsec tunnels per IPSec service line module	5,000	5,000
IPSec manual secure tunnels per chassis	256	256
IPSec transform sets per chassis	1,000	1,000
IPSec transforms per transform set	6	6
IPSec tunnels per chassis	10,000	10,000
L2F tunnels per module and per chassis	200	200
L2F sessions per module and per chassis	2,000	2,000
L2TP LAC sessions per chassis	16,000	16,000
L2TP LAC tunnels per chassis	4,000	4,000
L2TP LNS sessions per chassis	16,000	16,000
L2TP LNS tunnels per chassis	4,000	4,000
L2TP LNS sessions per Tunnel Service Module	8,000	8,000
L2TP LNS tunnels per Tunnel Service Module	4,000	4,000
Virtual routers per chassis	1,000	1,000
Virtual routers per line module ASIC/non-ASIC	1,000/250	1,000/250

a. The total set of FTEs can be shared by interfaces, next hops, ECMP sets, VRs, and VRFs. Next-hop FTEs identify the next hop on multiaccess media, such as ATM multipoint, Ethernet, or bridged Ethernet. Each VR or VRF consumes 3 entries. Each interface, next hop, and ECMP set consumes a single entry. One FTE is reserved for internal use and the system software limits the number of FTEs used by interfaces to a maximum of 32,000. The remaining FTEs can be shared across the other types.

b. There is no per-VR limit; all multicast routes could be on a single VR or present across multiple VRs.

c. The maximum number of interfaces can be achieved by any combination; for example 2 streams each being replicated to 32,768 interfaces; 16,384 streams each being replicated 4 times; or any other combination.

d. These values are subject to limitations on available SRP module memory, which varies according to your system configuration.

