

EX2500 Ethernet Switch 3.0 Release Notes

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These release notes accompany Release 3.0R1 of the Juniper Networks EX2500 Ethernet Switches and software. They briefly describe EX2500 hardware and software features and summarize the current software limitations and known defects that exist in this release.

All EX2500 documentation, including these release notes, is available from <http://www.juniper.net/techpubs/>. From the Technical Documentation Web page, select the EX Series link and then select **EX2500 Switches**.

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EX2500 Features

Release 3.0R1 of EX2500 Ethernet Switches and software includes the features described in this section. For more information, see the following manuals. (Go to <http://www.juniper.net/techpubs/>, select the EX Series link, and then select **EX2500 Switches**.)

- *EX2500 Ethernet Switch Hardware Guide*
- *EX2500 Ethernet Switch Web Device Manager Guide*
- *EX2500 Ethernet Switch Configuration Guide*
- *EX2500 Ethernet Switch Command Reference*

For a complete list of EX2500 documentation, see “List of Technical Publications” on page 12.

Hardware Support

EX2500 software is supported only on the EX2500 Ethernet Switch.

The 10-Gigabit Ethernet switch unit contains 24 10-gigabit Small Form-Factor Pluggable Plus (SFP+) slots and 2 RJ-45 1-gigabit management ports. The unit also has two redundant, load-sharing 275W AC power supplies, each with an IEC 320 power connector. The 10-gigabit SFP+ ports can accept 10-gigabit optical transceivers or direct-attach cables (DACs).

EX2500 switches are available in two models:

- Model EX2500-24F-FB provides front-to-back airflow.
- Model EX2500-24F-BF provides back-to-front airflow.

Software Features

EX2500 Ethernet Switch version 3.0R1 software has the following features. For detailed information about configuring EX2500 switch features and capabilities, see the *EX2500 Ethernet Switch Configuration Guide*.

Switch Management

- EX2500 command-line interface (CLI)
- Scriptable configuration management
- Telnet support
- EX2500 Web Device Manager interface with HTTP and HTTPS accessibility

Detection of Optics

- Automatic detection and approval of Juniper Networks 1-gigabit SFP and 10-gigabit SFP+ transceivers. All other transceivers are automatically detected and reported as accepted.

- Automatic detection and acceptance of direct-attach cables (DACs) that are programmed to meet multisource agreement (MSA) specifications.



NOTE: If a DAC is not programmed to meet MSA specifications, including the length identifier, the switch disables the port and generates a system log (syslog) message indicating that the DAC is not approved.

Layer 2 Features

- 16K forwarding database entries
- 1024 virtual LANs (VLANs) (IEEE 802.1Q), including private VLANs, and 4094 VLAN IDs
- Internet Group Management Protocol (IGMP) multicast snooping with FastLeave
- Port mirroring
- Multilink trunking, compatible with EtherChannel link aggregation

Link Aggregation (Port Trunking)

- Link Aggregation Control Protocol (LACP) (IEEE 802.3ad)
- Ethernet static trunking—up to 12 static trunk groups (portchannels) of up to 12 ports per group
- Trunk failover
- Configurable trunk hash algorithm

Standard Protocol Support

- SNMPv1, SNMPv2, and SNMPv3
- Remote Monitoring (RMON) groups 1, 2, 3, and 9
- Secondary Network Time Protocol (NTP)
- Domain Name Service (DNS) client
- Ping, ARP, and traceroute

Spanning Tree Protocol Support

- 128 Spanning Tree Groups (STGs)
- Rapid Spanning Tree Protocol (RSTP) (IEEE 802.1D/2004) through Per-VLAN Rapid Spanning Tree Plus Protocol (PVRST+)
- Multiple Spanning Tree Protocol (MSTP) (IEEE 802.1Q/2003)
- PVRST+ with Fast Uplink Convergence

Security

- TFTP image and configuration management
- SSH v1 and v2
- RADIUS and TACACS+ authentication and authorization
- Access Control List (ACL) filtering on source and destination MAC addresses, IP addresses, IP options, VLAN IDs, and TCP and UDP ports
- Broadcast Storm Control
- Secure interface login and password

Quality of Service (QoS)

- Up to eight IEEE 802.1p priority queues
- Differentiated Services Code Point (DSCP) prioritization

High Availability

- Uplink Failure Detection

Outstanding Issues

The following problems and limitations currently exist in EX2500 Ethernet Switches and software. The identifier after the description is the tracking number in the Juniper Networks bug database.

Hardware Issues

- For 1-gigabit fiber-optic transceivers, the unidirectional link failure detection is not fully functional and the switch might not bring down the link if the transmit (Tx) fiber-optic cable is severed. This limitation applies to 1-gigabit fiber-optic transceivers only. [PR/441155]
- The performance of 1-Gigabit Ethernet SFP ports is greater than 99.99 percent of line rate for all packets except 1518-bit packets, for which performance is 99.95 percent of line rate. [PR/441158]
- You can use the `dest-lookup-threshold` command to filter unknown unicast packets on 16 ports only. The EX2500 Ethernet Switch supports storm control on only 16 ports at a time. [PR/478978]

Software Issues

LACP and Trunk Groups (Portchannels)

- **LACP limitations.** LACP trunk (portchannel) behavior has the following limitations:
 - When ports become members of a trunk, configuration parameters (except ACL and QoS) are applied per trunk. When a trunk group is formed, these parameters are configured for the trunk ID, which overrides the port-level parameters.
 - The range of potential LACP trunk IDs is 13 through 36.
 - When an LACP trunk forms, the trunk ID is determined by the lowest port number in the trunk. For example, if the lowest port number is 1, then the LACP trunk ID is 13. For an LACP trunk that can contain ports 1 through 5, configure trunk characteristics for trunk (portchannel) IDs 13 through 17.
 - The LACP trunk ID can change if the link is lost on the lowest port in the group. When the trunk ID changes, trunk-level parameters are cleared. To avoid losing configuration parameters, configure LACP trunk-level parameters for all possible trunk IDs. Use the port range configuration mode to set parameters for all ports that might participate in LACP.
 - When a port becomes a member of a trunk group (portchannel), the trunk group overrides the individual port configuration.
 - If the port leaves the trunk group, you must reconfigure the port settings.
 - Each port that is configured to participate in LACP must be set to full duplex.

[PR/441157]

- **Port settings in trunk groups (portchannels).** Do not attempt to change port settings in trunk groups if the port is part of a static trunk or LACP trunk.
- **Effects of deleting a trunk group (portchannel):**
 - Traffic forwarded on a member of a trunk group (portchannel) continues to be forwarded on the port after the trunk group is deleted when the port is still active. To fix the problem, disable and then reenables the port as follows:

```
ex2500# interface-port <port alias or number> shutdown
ex2500# interface-port <port alias or number> no shutdown
```

[PR/443007]

- Disabled port members of trunk groups (portchannels) are automatically enabled when the trunk group is deleted.
- Ports must have the same VLAN properties to be added to a trunk group (portchannel).

Spanning Tree Limitations

- When Per VLAN Spanning Tree (PVST) Protection is enabled, and a PVST+ or PVRST+ bridge protocol data unit (BPDU) is received, the port takes about 1 second to shut down. During this short interval, you might see other packets on the port. [PR/441159]
- If PVST Protection is disabled on a port, PVST+ and PVRST+ BPDUs are forwarded through all ports in the VLAN. The PVST Protection setting on other ports is ignored. We recommend that you configure PVST Protection to the same setting on all ports. [PR/441160]
- If a standard 802.1D BPDU is received on an untagged port in PVRST mode, and the Spanning Tree Group (STG) for the VLAN is disabled, the BPDU is not forwarded out of the other untagged ports in the VLAN. In contrast, PVST+ and PVRST+ BPDUs are forwarded properly.
- In PVRST mode, if a port is in a disabled Spanning Tree Group (STG), and VLAN 1 is not mapped to the STG, then standard 802.1D BPDUs received on the port are not forwarded to other ports in the VLAN. In contrast, PVST+ and PVRST+ BPDUs are forwarded properly.

If Spanning Tree is turned off, BPDUs are forwarded properly.

[PR/441161]

Spanning Tree Mode Change

When the Spanning Tree mode is changed (for example, from RSTP to MSTP):

- You must reconfigure Spanning Tree parameters for each Spanning Tree Group (STG), including VLAN assignment. [PR/441162]
- The Spanning Tree topology might become unstable for up to 1 minute when indirect link failure with root change occurs. Traffic might be disrupted until the topology converges. [PR/441167]
- Path-cost instability might occur during STP convergence. [PR/441168]
- If you are changing the Spanning Tree mode from the EX2500 Web Device Manager, the Web Device Manager might not respond for up to 40 seconds. [PR/441169]
- If an STG in RSTP mode is disabled and then re-enabled, the STP topology does not converge rapidly. [PR/441172]

VLANs

- **VLAN deletion.** The switch displays invalid error messages when you delete VLANs that contain all 24 ports, or when you delete VLANs from multiple Spanning Tree Groups (STGs). As a workaround, delete the VLANs one at a time. [PR/443010]

- **Private VLANs:**

- Static MAC addresses can be assigned on the primary VLAN only and not on the secondary VLAN port.
- The private VLAN table is cleared and reconfigured each time port membership in the private VLAN changes.

MSTP and VLANs

- If the association between the STG and a VLAN is broken, the Spanning Tree parameters are cleared. Reconfigure all the parameters for the STG.
- Each STG must have a VLAN assigned to it before it becomes functional. You cannot configure other STG settings until the VLAN is assigned. If the STG VLAN is unassigned, other configuration settings are cleared. Assign a VLAN and reconfigure the STG settings. [PR/441173]

IGMPv3

- The EX2500 implementation of IGMPv3 keeps a record of each multicast host connected to the switch.
- The switch does not maintain a separate timer for each source, group, or VLAN. When the switch purges IGMP groups, you might experience a delay of up to 10 seconds before stale IGMP groups are deleted. [PR/441176]

Uplink Failure Detection (UFD)

- When using trunk groups in the UFD Failure Detection Pair, if you add or remove a port from the Link to Monitor (LtM) or Link to Disable (LtD) trunk group, you must turn off UFD and then turn on UFD, as follows:

```
ex2500# no ufd enable
ex2500# ufd enable
```

[PR/441180]

- When using UFD with Spanning Tree off, if you use an LACP trunk group in the LtM, the LtD status remains **up** even if the LtM LACP trunk group is not aggregated across switches. [PR/441181]
- If an LtD group is removed after the LtM fails, the switch displays the LtD ports as enabled even though no cable is connected. To fix the problem, disable and then reenab the port as follows:

```
ex2500# interface-port <port alias or number> shutdown
ex2500# interface-port <port alias or number> no shutdown
```

[PR/443004]

RADIUS

When RADIUS authentication fails, the system default password `admin` does not provide access to the switch, even though the RADIUS secure back door feature is enabled. As a workaround, use the default RADIUS ID—`noradius`—for access.

SSH

The SSH keys are regenerated each time the system is rebooted. [PR/433323]

CLI

Using the Up Arrow key on the command line displays the previously entered command even when the current user is a different user or the command is entered in a different command mode. [PR/433327]

EX2500 Software Upgrade and Management

This section contains the following topics:

- Downloading the EX2500 Software Image on page 8
- Loading New Software to Your Switch on page 10
- Using the Boot Management Menu on page 11

Downloading the EX2500 Software Image

The switch software image is the executable code running on the switch. A version of the image ships with the switch and comes preinstalled. As new versions of the image are released, you can upgrade the software running on your switch. Use the following command to determine the current software version on the switch:

```
ex2500# show boot
```

Getting Access to EX2500 Software

To access the latest version of software available for your EX2500 switch, you must have a Juniper Networks customer account and have registered your product with Juniper Networks.

If you do not have an account, you can request a new account, at https://registration.juniper.net/ent/registration/login_assistance.aspx.

To register your EX2500 switch at the Customer Support Center (CSC) Web site:

1. Go to <http://www.juniper.net/support/>.
2. Under Contract and Product Management, click **Register New Product**.
3. Log in to your account, and follow the registration steps as prompted.

Downloading the Software

To download the latest version of software available for your EX2500 switch:

1. Go to <http://www.juniper.net/support/>.
2. Under MANAGE PRODUCTS, locate Download Software and select **More software**.
3. Log in to your account.
4. On the DOWNLOAD SOFTWARE page, locate Other, and select **EX2500**.
5. On the next DOWNLOAD SOFTWARE page, click **SEARCH** to display a list of your registered products and their serial numbers and model numbers.
6. Select the product for which you want to download software, and click **DOWNLOAD**.
7. Click **AGREE** to accept the Juniper Networks license agreement and encryption agreement.
8. Select the software version.
9. To install software binaries, click the **Software** tab, and select the EX2500 software package to install.

The process downloads two images: the EX2500 software image and the EX2500 boot image.

To access EX2500 documentation, click the **Documentation** tab.

Upgrading the Software on Your Switch



CAUTION: When you upgrade the switch software image, always load the new boot image at the same time. If you do not load a new boot image, your switch might not boot properly (To recover, see “Using the Boot Management Menu” on page 11.) Each new boot image is backward compatible with older software images.

To upgrade the software image on your switch, you perform the following tasks:

1. Load the new software image and boot image onto a TFTP server on your network and transfer the images to your switch. (See “Loading New Software to Your Switch” on page 10.)
2. Select the new software image to be loaded into switch memory the next time the switch is reset. (See “Selecting a Software Image to Run” on page 10.)
3. Reset the switch. (See “Rebooting or Resetting the Switch” on page 11.)

Loading New Software to Your Switch

The switch can store up to two different software images, called **image1** and **image2**, as well as boot software, called **boot-image**. When you load new software, you must specify where it should be placed: either into **image1**, **image2**, or **boot-image**.

For example, if your active image is currently loaded into **image1**, you would probably load the new image software into **image2**. This lets you test the new software and reload the original active image (stored in **image1**), if needed.

Each software release generally requires a new boot image. Before you attempt to boot the switch with a new software image, load the new boot image, if available.

To load a new software image to your switch, you need the following:

- The software image and boot image loaded on a TFTP server on your network
- The hostname or IP address of the TFTP server
- The name of the new software image and boot image



NOTE: You must configure the DNS parameters when specifying hostnames.

When these requirements are met, use the following procedure to download the new software to your switch:

1. In Privileged EXEC mode, enter the following command:

```
ex2500# copy tftp { image1 | image2 | boot-image }
```

2. Enter the hostname or IP address of the TFTP server:

```
Address or name of remote host: <name or IP address>
```

3. Enter the name of the new software file on the server:

```
Source file name: <filename>
```

The exact form of the name will vary by server. However, the file location normally is relative to the TFTP directory (usually **tftpboot**).

4. When the system prompts you, confirm your request.
5. Go on to “Selecting a Software Image to Run” on page 10.

Selecting a Software Image to Run

You can select the software image (**image1** or **image2**) you want to run in switch memory for the next reboot.

1. In Global Configuration mode, enter:

```
ex2500(config)# boot image { image1 | image2 }
```

2. Enter the name of the image you want the switch to use.

The system informs you which image set is to be loaded at the next reboot:

```
Next boot will use switch software image1 instead of image2.
```

Rebooting or Resetting the Switch

You reload software on the switch to make your software image file changes take place:

1. In Global Configuration mode, enter the following command to reload the switch:

```
ex2500(config)# reload
```

2. When prompted, confirm your request:

```
Reset will use software "image2" and the active config block.
```

```
Confirm reload (y/n) y
```

Using the Boot Management Menu

The Boot Management menu allows you to switch the software image, reset the switch to factory defaults, or recover from a failed software download.

You can interrupt the boot process and enter the Boot Management menu from the serial console port. When the system displays **Memory Test**, press Shift + B simultaneously. The Boot Management menu appears.

```
Resetting the System ...
Memory Test .....
```

```
Boot Management Menu
1 - Change booting image
2 - Change configuration block
3 - Xmodem download
4 - Exit
```

```
Please choose your menu option: 1
Current boot image is 1. Enter image to boot: 1 or 2: 2
Booting from image 2
```

The Boot Management menu allows you to perform the following actions:

- To change the boot image, type **1** and follow the screen prompts.
- To change the configuration block, type **2**, and follow the screen prompts.
- To perform an Xmodem download, type **3** and follow the screen prompts.
- To exit the Boot Management menu, type **4**. The booting process continues.

List of Technical Publications

Table 1 lists the documentation supporting the EX2500 Ethernet Switch. All EX2500 documentation is available from <http://www.juniper.net/techpubs/>—select the EX Series link and then select **EX2500 Switch**.

Table 1: EX2500 Ethernet Switch Documentation

Document	Description
<i>EX2500 Ethernet Switch Quick Start</i>	Provides brief installation and initial configuration instructions.
<i>EX2500 Ethernet Switch Hardware Guide</i>	Provides information and instructions for installing an EX2500 Ethernet Switch.
<i>EX2500 Ethernet Switch Web Device Manager Guide</i>	Provides an overview of how to access and use the EX2500 Web Device Manager.
<i>EX2500 Ethernet Switch Configuration Guide</i>	Describes how to configure and use the software on the EX2500 Ethernet Switch.
<i>EX2500 Ethernet Switch Command Reference</i>	Describes how to configure and use the software with your EX2500 Ethernet Switch. The reference lists each EX2500 command-line interface (CLI) command and includes the complete syntax and a functional description.
<i>EX2500 Ethernet Switch Release 3.0 Release Notes</i>	Summarize EX2500 switch features and known problems, provide information that might have been omitted from the manuals, and provide upgrade instructions.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. Send e-mail to techpubs-comments@juniper.net with the following information:

- Document URL or title
- Page number
- Software version
- Your name and company

Requesting Technical Support

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

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <http://www.juniper.net/customers/support/downloads/710059.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

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

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product and serial number, use our Serial Number Entitlement (SNE) Tool at <http://tools.juniper.net/SerialNumber/EntitlementSearch/>.

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the US, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at <http://www.juniper.net/support/requesting-support.html>.

Revision History

24 April 2009—Revision 1, EX2500 Release 3.0R1
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