

# Extreme SLX-OS Software Upgrade Guide, 18x.1.00

Supporting the ExtremeSwitching SLX 9030 Switches

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# Preface

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This section discusses the conventions used in this guide, ways to provide feedback, additional help, and other Extreme Networks® publications.

## Conventions

This section discusses the conventions used in this guide.

## Notes, cautions, and warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

### NOTE

A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

### ATTENTION

An Attention statement indicates a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.



### CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



### DANGER

*A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.*

## Text formatting conventions

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

Format	Description
<b>bold text</b>	Identifies command names. Identifies keywords and operands. Identifies the names of GUI elements.
<i>italic text</i>	Identifies text to enter in the GUI. Identifies emphasis. Identifies variables. Identifies document titles.

Format	Description
Courier font	Identifies CLI output.
	Identifies command syntax examples.

## Command syntax conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
<b>bold text</b>	Identifies command names, keywords, and command options.
<i>italic text</i>	Identifies a variable.
[ ]	Syntax components displayed within square brackets are optional.
	Default responses to system prompts are enclosed in square brackets.
{ x   y   z }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x   y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, <i>member[member...]</i> .
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

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Current Product Documentation	<a href="http://www.extremenetworks.com/documentation/">www.extremenetworks.com/documentation/</a>
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If you require assistance, contact Extreme Networks using one of the following methods:

- **GTAC (Global Technical Assistance Center) for Immediate Support**
  - **Phone:** 1-800-998-2408 (toll-free in U.S. and Canada) or +1 408-579-2826. For the support phone number in your country, visit: [www.extremenetworks.com/support/contact](http://www.extremenetworks.com/support/contact)
  - **Email:** [support@extremenetworks.com](mailto:support@extremenetworks.com). To expedite your message, enter the product name or model number in the subject line.
- **Extreme Portal** — Search the GTAC knowledge base, manage support cases and service contracts, download software, and obtain product licensing, training, and certifications.
- **The Hub** — A forum for Extreme Networks customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

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2. Complete the form with your information (all fields are required).
3. Select the products for which you would like to receive notifications.

### NOTE

You can modify your product selections or unsubscribe at any time.

4. Click **Submit**.

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- Ideas for improvements to our documentation so you can find the information you need faster.

- Broken links or usability issues.

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- Use our short online feedback form at <https://www.extremenetworks.com/documentation-feedback/>.
- Email us at [documentation@extremenetworks.com](mailto:documentation@extremenetworks.com).

Please provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.



# About This Document

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## Supported hardware and software

The following platforms are supported by this release:

- ExtremeSwitching SLX 9030 Series

## What's new in this document

The SLX-OS 18x.1.00 release is the first SLX-OS release that supports SLX 9030 devices.

## Regarding Ethernet interfaces and chassis devices

Many features can apply to either single-slot (1 RU) or multi-slot (chassis) devices.

The Ethernet interface configuration and output examples in this document may appear as either  $O/X$  or  $N/X$  assignments, where  $N$  is an integer greater than 0.

Be aware of the interface configuration options of your particular device.

In addition, some legacy show outputs may reflect output from a variety of devices, including chassis devices.



# Software Installation

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## Prepare for the installation

To prepare for the installation, perform the following tasks.

### NOTE

In the unlikely event of a failure or timeout, you will be able to provide your router support provider the information required to troubleshoot the problem by performing the tasks.

1. Ensure that all production traffic is detoured from the device that is under-going the firmware upgrade.
2. Ensure that network connectivity is established to allow the **scp** or **ftp** command to complete the FWD download of the image to the devices. For example, enter the following command to verify network connectivity:

```
# ping <server_address>
```

3. Prepare to complete the firmware upgrade steps using a console with access to the device.
4. Save the "startup-config" file to a remote server. For example, enter the following command to save the file:

```
# copy running-config tftp://@<server_address>/
```

5. Complete the pre-requisites for the installation by collecting the system context using the following commands:

- **show version**
- **show chassis**
- **show environment fan/power/history/sensor/temp**
- **show interface status**
- **show license**
- **show firmwaredownloadhistory**
- **show firmwaredownloadstatus**
- **show media**
- **show run**

6. Enter the following FTP firmware download command:

```
# firmware download ftp coldboot user <username> password <password> file release.xlist directory <file_path> host <server_ip>
```

7. Enter the following USB firmware download command, where "SLX-OS\_vX.X.X" refers to the current version number:

```
# firmware download usb coldboot directory SLX-OS_vX.X.X
```

8. Verify the system after the firmware download. For example, enter the following commands to verify the firmware was downloaded:

- **show version**
- **show firmwaredownloadstatus**
- **show firmwaredownloadhistory**

# Installation procedure

Two methods to perform firmware installation are available, using ONIE and using the firmware install command. ONIE requires network access and is described in the [ONIE overview](#) on page 21 section. To complete the installation using the firmware install command, perform the following tasks.

1. Login to the SLX device.
2. Check the license to make sure that the `ADVANCED_FEATURES` license exists by entering the following command:

```
device# show license
```

3. Login to the SLX device as root.
4. Use the firmware install [ `http|ftp|scp|sftp host<host_ip> user<username> password<password> directory<directory>` ]command to install the firmware. For example:

```
[root@SLX]# firmware install
You are installing the slxos18s.1.0_bld01, this command will cause the switch to reboot, and will
restore the switch back to factory default. You will need to save the configuration before
proceeding.
```

```
Do you want to continue? <y/n> y
```

```
Installing slxos18s.1.0_bld01. It will take a moment. Please wait...
```

# Installing and Maintaining Firmware

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## Firmware management overview

### SLX 9030 series firmware management

Extreme firmware upgrades consist of multiple firmware packages listed in a .bin file and release.xlist file. The .bin file contains the firmware for both SLX 9030 and SLX 9030T. The release.xlist describes the meta data of the .bin file, such as the size, the platforms supported, and so on. The .bin and the release.xlist are signed with SHA256 2048-bit keys, which are required to be validated in firmware upgrade process.

The firmware packages are made available periodically to add features or to remedy defects in the firmware. In SLX-OS, the firmware upgrade is performed incrementally. The **firmware download** command compares the new firmware packages against the current installation and only downloads the packages that contain new features or have been modified. The **firmware download** command updates the ONIE image and diag OS images automatically as part of the process. You do not need to run the **onie install** and **diag install** commands to install the onie image and diag OS image, respectively. BIOS is installed during the manufacturing time only (BIOS is not updated as part of firmware download). If you need to update the BIOS, it can be done through USB only.

You can download the firmware from a remote server by means of the Hyper Text Transfer Protocol (HTTP), File Transfer Protocol (FTP), SSH File Transfer Protocol (SFTP), Trivial File Transfer Protocol (TFTP), or Secure Copy Protocol (SCP). If you want to download firmware from a remote server, you must connect the management Ethernet port of the router to the server. In a modular chassis, both management Ethernet ports must be connected. Downloading from an Extreme proprietary USB drive is also supported.

If a firmware download session is interrupted by an unexpected reboot, SLX-OS attempts to recover the previously installed firmware. Success depends on the state of the firmware download. You must wait for the recovery to complete before initiating another firmware download.

### Preserving the configuration

To preserve the configurations, back up the configuration using the **copy running-config filename** command before the firmware download. After the upgrade is completed, run the **copy filename running-config** command.

## Connecting to the device

When you upgrade firmware in default mode, you connect to the device through the management IP address.

Use the **show system** command to display the management IP address for the chassis.

```
device# show system
Stack MAC                : 00:04:96:9f:5d:12

  -- UNIT 0 --
Unit Name                : SLX
Up Time                  : up 0:04
Current Time             : 20:49:59 GMT
SLX-OS Version           : 18x.1.00
Jumbo Capable           : yes
Burned In MAC            : 00:04:96:9F:5D:0E
Management IP            : 10.68.14.248 ← Chassis Management IP address
Management Port Status   : UP

  -- Power Supplies --
PS1 is OK
PS2 is absent

  -- Fan Status --
Fan 1 is Ok, speed is 6001 RPM
Fan 2 is Ok, speed is 6149 RPM
Fan 3 is Ok, speed is 6001 RPM
Fan 4 is Ok, speed is 6149 RPM
Fan 5 is Ok, speed is 6149 RPM
Fan 6 is Ok, speed is 6149 RPM
```

#### NOTE

You must configure the gateway and default route that is pointing to the management interface within the management VRF and address-family unicast context.

## Upgrading considerations and restrictions

Consider the following when upgrading your firmware version:

- Upgrading SLX-OS is automatically allowed because the Telnet server and SSH server status are enabled by default.
- Upgrading SLX-OS is a disruptive event and reboots the device.

## Prerequisites for firmware download

To prepare for a firmware download, perform the following tasks. In the unlikely event of a failure or timeout, you will be able to provide your router support provider the information required to troubleshoot the firmware download.

1. Verify the current firmware version. Refer to [Obtaining the firmware version](#) on page 15.
2. Download the firmware package from the Extreme website to an FTP server.
3. Decompress the firmware archive. Refer to [Obtaining and decompressing firmware](#) on page 15.
4. Decide on a migration path. Check the connected devices to ensure firmware compatibility. Refer to the "SLX-OS Compatibility" section of the *SLX-OS Release Notes* for the recommended firmware version.
5. In a modular system, if you are to download firmware from a file server, verify that the management ports on both MMs are connected to the firmware file server.
6. Back up your router configuration using the **copy running-config filename** command before the firmware download.
7. For additional support, connect the router to a computer with a serial console cable. Ensure that all serial consoles and any open network connection sessions, such as Telnet, are logged and included with any trouble reports.

8. Enter the **copy support** command to collect all current core files prior to executing the firmware download. This information helps to troubleshoot the firmware download process in the event of a problem. Once the **copy support** command is issued collects the files, you can use the **clear support** command to remove the files from the list.
9. Enter the **clear logging raslog** command to erase all existing messages in addition to internal messages.

## Obtaining the firmware version

Enter the **show version** command to obtain the firmware version for both primary and secondary partitions of each module.

```
device# show version
SLX-OS Operating System Version: 18x.1.00
Copyright (c) 1995-2018 Extreme Networks.
Firmware name:      18x.1.00
Build Time:         00:51:24 Sep  6, 2018
Install Time:       20:44:16 Oct 22, 2018
Kernel:            2.6.34.6
```

```
Control Processor: GenuineIntel
System Uptime:     0days 0hrs 5mins 9secs
```

Name	Primary/Secondary Versions
SLX-OS	18x.1.00 18x.1.00

## Obtaining and decompressing firmware

Firmware upgrades are available for customers with support service contracts and for partners on the Extreme Networks website at [www.extremenetworks.com](http://www.extremenetworks.com).

You must download the firmware package to the protocol variant server, such as FTP or SCP, and decompress the package *before* you can use the **firmware download** command to upgrade the firmware on your equipment.

You may also download the firmware from a USB drive using the **firmware download usb** command.

When you unpack the downloaded firmware, it expands into a directory that is named according to the firmware version. When issued with the path to the directory where the firmware is stored, the **firmware download** command performs an automatic search for the correct package file type associated with the device.

The following **firmware download** command options are available:

- **coldboot**: Downloads the firmware to the system and reboots the device.
- **default-config**: Removes all configuration and is similar to an initial installation and configuration.
- **usb**: Downloads the firmware to the system without activating it, so the device is not automatically rebooted.

Refer to the *Extreme SLX-OS Command Reference* for complete information on all of the available options for the **firmware download** command.

### NOTE

To be able to address the FTP or SCP server by its name, ensure that a Domain Name System (DNS) entry is established for the server.

### NOTE

SLX-OS does not support the use of special characters (such as &, !, %, or #) in FTP, TFTP, SFTP, or SCP passwords. If your password contains special characters, the download fails.

## Standard method for downloading firmware

The **firmware download** command has several options for downloading firmware for your device that help control the process. For complete information on the **firmware download** command options, refer to the *Extreme SLX-OS Command Reference*.

By default, if you enter the **firmware download** command without any options, the command invokes the **firmware download coldboot** command. Both the **coldboot** and **default-config** options involve system reboots and are disruptive to traffic.

The follow example shows a typical firmware download:

```
device# firmware download scp host 10.6.46.54 directory /buildsjc/sre/SQA/slxosx/slxos18x.1.00/slxos18x.
1.00 user fvt
Password: *****
Performing system sanity check...

This command will cause a cold/disruptive reboot and will require that existing telnet, secure telnet or
SSH sessions be restarted.

Do you want to continue? [y/n]y
```

Once the process completes, log in to the device and enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Version: 18x.1.00
Copyright (c) 1995-2018 Extreme Networks.
Firmware name:      18x.1.00
Build Time:         00:51:24 Sep  6, 2018
Install Time:       20:44:16 Oct 22, 2018
Kernel:             2.6.34.6

Control Processor:  GenuineIntel
System Uptime:     0days 0hrs 5mins 9secs

Name      Primary/Secondary Versions
-----
SLX-OS    18x.1.00
          18x.1.00
```

## Downloading firmware using the default-config option

The **firmware download default-config** command allows you to download new firmware onto the router, clean up the configuration, and then force the router to perform a cold reboot.

This option is useful to prevent issues caused by incompatible configurations between the old and the new firmware.



### CAUTION

When you use **firmware download default-config**, traffic is disrupted and the configuration is lost. You must save the configuration information before you execute the command and then restore it afterwards.

1. Download the firmware from the source directory with the default-config option.

```
device# firmware download default-config sc0 host 10.6.46.54 directory /buildsjc/sre/SQA/slxosx/
slxos18x.1.00/slxos18x.1.00 user fvt
Password: *****
Performing system sanity check...

This command will cause a cold/disruptive reboot and will require that existing telnet, secure
telnet or SSH sessions be restarted.

Do you want to continue? [y/n]: y
```

2. Log back into the device.



3. Enter the **firmware commit** command to commit the new firmware. If you entered **y** after the prompt, the device will commit the firmware automatically upon booting up.

```
device# firmware commit
Validating primary partition...
Doing firmwarecommit now.
Please wait ...
Replicating kernel image
.....
FirmwareCommit completes successfully.
```

4. Enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Software
SLX-OS Operating System Version: 18x.1.00
Copyright (c) 1995-2018 Extreme Networks, Inc.
Firmware name:      18x.1.00
Build Time:         21:24:13 Mar  7, 2018
Install Time:       21:46:10 Mar  9, 2018
Kernel:             2.6.34.6
Host Version:       Ubuntu 14.04 LTS
Host Kernel:        Linux 3.14.17

Control Processor:  QEMU Virtual CPU version 2.0.0

System Uptime:     16days 23hrs 48mins 7secs

Slot  Name      Primary/Secondary Versions          Status
-----
SW/0  SLX-OS  18x.1.00
      18x.1.00
      ACTIVE*
```

## Downloading firmware using the coldboot option

The **coldboot** option of the **firmware download** command allows you to download new firmware onto a device and forces the device to perform a cold reboot. For complete information on the **firmware download** command options, refer to the *Extreme SLX-OS Command Reference*.

After the firmware completes downloading, the device reboots. This ensures that both partitions reboot with the same firmware, and prevents any firmware compatibility issues that may exist between the old and the new firmware.



### CAUTION

When you use **firmware download coldboot**, traffic is disrupted and the configuration is lost. You must save the configuration information before you execute the command and then restore it afterwards.

1. Download the firmware from the source directory with the **coldboot** option.

```
device# firmware download scp coldboot host 10.6.46.54 directory /buildsjc/sre/SQA/slxosx/slxos18x.
1.00/slxos18x.1.00 user fvt
Password: *****
Performing system sanity check...
```

This command will cause a cold/disruptive reboot and will require that existing telnet, secure telnet or SSH sessions be restarted.

```
Do you want to continue? [y/n]: y
```

2. Log back into the device.

3. Enter the **firmware commit** command to commit the new firmware. If you entered **y** after the prompt, the device will commit the firmware automatically upon booting up.

```
device# firmware commit
Validating primary partition...
Doing firmwarecommit now.
Please wait ...
Replicating kernel image
.....
FirmwareCommit completes successfully.
```

4. Enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Version: 18x.1.00
Copyright (c) 1995-2018 Extreme Networks.
Firmware name:      18x.1.00
Build Time:         00:51:24 Sep  6, 2018
Install Time:       20:44:16 Oct 22, 2018
Kernel:             2.6.34.6

Control Processor:  GenuineIntel
System Uptime:      0days 0hrs 5mins 9secs

Name      Primary/Secondary Versions
-----
SLX-OS    18x.1.00
          18x.1.00
```

## Downloading firmware from a USB device

Extreme Network devices support firmware download from a USB device. Before you can access the USB device, you must enable the device and mount it as a file system. The firmware images to be downloaded must be stored in the factory-configured firmware directory. Multiple images can be stored under this directory.

1. Ensure that the USB device is connected to the device.
2. Enter the **usb on** command in privileged EXEC mode.

```
device# usb on
Trying to enable USB device. Please wait...
USB storage enabled
```

3. Enter the **usb dir** command. In this sample output, the "SLX-OS\_vX.X.X" refers to the current version number.

```
device# usb dir
firmwarekey\ 0B 2016 Dec 15 15:13
support\ 106MB 2016 Dec 24 05:36
config\ 0B 2016 Dec 15 15:13
firmware\ 380MB 2016 Dec 15 15:13
SLX-OS_vX.X.X\ 379MB 2016 Dec 15 15:31
Available space on usbstorage 74%
```

4. Enter the **firmware download usb** command followed by the relative path to the firmware directory, where the "SLX-OS\_vX.X.X" refers to the current version number.

```
device# firmware download usb directory SLX-OS_vX.X.X
```

5. Enter the **usb off** command to unmount the USB storage device for safe removal.

```
device# usb off
Trying to disable USB device. Please wait...
USB storage disabled.
```

# Downgrading considerations and restrictions

Consider the following when downgrading your firmware version:

- If a feature is new for the current version of your firmware, it does not function if you downgrade your firmware version.
- Firmware downgrades to previous versions are prohibited when security parameters are configured for HTTPS support.

Always refer to the release notes for compatibility information and take note of restrictions that may exist regarding upgrades and downgrades under particular circumstances.



# Configuring ONIE

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## ONIE overview for the SLX 9030

Open Network Install Environment (ONIE) is the combination of a boot loader and a small operating system for bare metal network devices that provides an environment for automated provisioning. The SLX 9030 device boots SLX-OS from the images stored on hard disk of the device. The initial installation of these images are performed by Extreme Networks before shipping. ONIE also provides mechanisms to re-install or update SLX-OS.

The **firmware download** command updates the ONIE image and diag OS images automatically as part of the process (you do not need to run the **onie install** and **diag install** commands to install the onie image and diag OS image, respectively).

The process supported by the **firmware download** command is not affected by this feature. The SLX-OS firmware is not updated to the snapshot partition during the normal upgrade process.

Refer to the Open Compute Project website for complete information on ONIE.

## Accessing the ONIE rescue shell

In certain situations, you may need to boot the SLX device directly to the Open Network Install Environment (ONIE) shell in order to execute ONIE commands.

The following Open Network Install Environment (ONIE) procedure is executed after system reboot.

1. Choose "ONIE" from the menu.
2. Choose "onie rescue" from the ONIE menu. The system boots to the ONIE busybox shell.  
At this point, ONIE can be used for firmware netinstall.

## Installing SLX-OS using ONIE

This procedure installs the SLX-OS software on the switch.

The following Open Network Install Environment (ONIE) procedure is executed from the switch system console.

1. Reboot the switch.
2. Select ONIE Rescue during the booting up process.  
The system boots to the ONIE command prompt.
3. At the ONIE command prompt, enter the following command to install <bin> from the tftp server: `install_url tftp://<ip_of_tftp_server>/<pathname_of_onie_installer_bin>`.

```
# install_url tftp://10.xx.xx.3/slxos/SLXOS_SWBD3006-18x.1.00-ONIE.bin
```

After installation, the switch will reboot and startup SLX-OS.



# SLX-OS Capabilities

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## Viewing software capabilities

To display information about the software capabilities, enter the **show license** command. The command output displays the currently installed licenses for Extreme SLX-OS.

For example:

```
device# show license
?????:
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  Advanced Features license
  Feature name:ADVANCED_FEATURES
  License is Trust Based
  Eula date is Tue Mar 14 16:54:59 2018
```