



# Extreme SLX-OS Software Licensing Guide, 20.2.1a

Supporting ExtremeRouting and ExtremeSwitching  
SLX 9640, SLX 9540, SLX 9250, and SLX 9150

9036685-01 Rev AA  
August 2020



Copyright © 2020 Extreme Networks, Inc. All rights reserved.

## Legal Notice

Extreme Networks, Inc. reserves the right to make changes in specifications and other information contained in this document and its website without prior notice. The reader should in all cases consult representatives of Extreme Networks to determine whether any such changes have been made.

The hardware, firmware, software or any specifications described or referred to in this document are subject to change without notice.

## Trademarks

Extreme Networks and the Extreme Networks logo are trademarks or registered trademarks of Extreme Networks, Inc. in the United States and/or other countries.

All other names (including any product names) mentioned in this document are the property of their respective owners and may be trademarks or registered trademarks of their respective companies/owners.

For additional information on Extreme Networks trademarks, see: [www.extremenetworks.com/company/legal/trademarks](http://www.extremenetworks.com/company/legal/trademarks)

## Open Source Declarations

Some software files have been licensed under certain open source or third-party licenses. End-user license agreements and open source declarations can be found at: <https://www.extremenetworks.com/support/policies/open-source-declaration/>



# Table of Contents

---

<b>Preface.....</b>	<b>4</b>
Text Conventions.....	4
Documentation and Training.....	6
Getting Help.....	6
Subscribe to Service Notifications.....	6
Providing Feedback.....	7
<b>About This Document.....</b>	<b>8</b>
What's New in This Document.....	8
Supported Hardware.....	8
<b>Software Licensing Overview.....</b>	<b>9</b>
Software-based licensing overview.....	9
How software-based licensing works.....	9
License types.....	9
Software license terminology.....	10
Licensing rules.....	10
Licensing considerations.....	14
Software licensing configuration tasks .....	14
<b>Software Licensing Tasks.....</b>	<b>22</b>
Installing a license.....	22
Displaying a license .....	23
Adding or removing a SAU license.....	24
Displaying the device license ID.....	25
Removing licenses.....	26
Troubleshooting licensing issues.....	27
License is not properly installed.....	28
<b>Dynamic Ports on Demand Licensing.....</b>	<b>29</b>
Capacity on Demand and Dynamic Ports on Demand overview.....	29
Managing automatic POD port assignments.....	30
Mapping port assignments to a POD port set.....	30
Activating the Dynamic POD feature .....	30
Displaying the Dynamic POD assignments.....	31
Overriding Dynamic POD assignments.....	32
Reserving a port assignment.....	32
Releasing a port from a POD set.....	33
<b>SLX OS Licensed Features and Part Numbers.....</b>	<b>35</b>
SLX 9540, SLX 9640, SLX 9150, and SLX 9250 part numbers.....	35



# Preface

---

This section describes the text conventions used in this document, where you can find additional information, and how you can provide feedback to us.




## Text Conventions

---



Unless otherwise noted, information in this document applies to all supported environments for the products in question. Exceptions, like command keywords associated with a specific software version, are identified in the text.

When a feature, function, or operation pertains to a specific hardware product, the product name is used. When features, functions, and operations are the same across an entire product family, such as ExtremeSwitching switches or SLX routers, the product is referred to as *the switch* or *the router*.

**Table 1: Notes and warnings**

Icon	Notice type	Alerts you to...
	Tip	Helpful tips and notices for using the product.
	Note	Useful information or instructions.
	Important	Important features or instructions.

**Table 1: Notes and warnings (continued)**

Icon	Notice type	Alerts you to...
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.

**Table 2: Text**

Convention	Description
<code>screen displays</code>	This typeface indicates command syntax, or represents information as it appears on the screen.
The words <i>enter</i> and <i>type</i>	When you see the word <i>enter</i> in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says <i>type</i> .
<b>Key</b> names	Key names are written in boldface, for example <b>Ctrl</b> or <b>Esc</b> . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press <b>Ctrl+Alt+Del</b>
<i>Words in italicized type</i>	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.
<b>NEW!</b>	New information. In a PDF, this is searchable text.

**Table 3: Command syntax**

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

---

## Documentation and Training

---

Find Extreme Networks product information at the following locations:

[Current Product Documentation](#)

[Release Notes](#)

[Hardware and software compatibility](#) for Extreme Networks products

[Extreme Optics Compatibility](#)

[Other resources](#) such as white papers, data sheets, and case studies

Extreme Networks offers product training courses, both online and in person, as well as specialized certifications. For details, visit [www.extremenetworks.com/education/](http://www.extremenetworks.com/education/).

---

## Getting Help

---

If you require assistance, contact Extreme Networks using one of the following methods:

### Extreme Portal

Search the GTAC (Global Technical Assistance Center) 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.

### Call GTAC

For immediate support: (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)

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

- Your Extreme Networks service contract number, or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any actions 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

## Subscribe to Service Notifications

You can subscribe to email notifications for product and software release announcements, Vulnerability Notices, and Service Notifications.

1. Go to [www.extremenetworks.com/support/service-notification-form](http://www.extremenetworks.com/support/service-notification-form).
2. Complete the form (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. Select **Submit**.

## Providing Feedback

---

The Information Development team at Extreme Networks has made every effort to ensure the accuracy and completeness of this document. We are always striving to improve our documentation and help you work better, so we want to hear from you. We welcome all feedback, but we especially want to know about:

- Content errors, or confusing or conflicting information.
- Improvements that would help you find relevant information in the document.
- Broken links or usability issues.

If you would like to provide feedback, you can do so in three ways:

- In a web browser, select the feedback icon and complete the online feedback form.
- Access the feedback form at <https://www.extremenetworks.com/documentation-feedback/>.
- Email us at [documentation@extremenetworks.com](mailto:documentation@extremenetworks.com).

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

---

[What's New in This Document](#) on page 8  
[Supported Hardware](#) on page 8

## What's New in This Document

---

This guide accompanies the SLX-OS 20.2.1a software release. There are no changes to the guide from the previous release.

For more information about the release, see the *Extreme SLX-OS Release Notes*.

## Supported Hardware

---

For instances in which a topic or part of a topic applies to some devices but not to others, the topic specifically identifies the devices.

SLX-OS 20.2.1a supports the following hardware platforms.

- Devices based on the Broadcom XGS® chipset family:
  - ExtremeSwitching SLX 9250
  - ExtremeSwitching SLX 9150
- Devices based on the Broadcom DNX® chipset family:
  - ExtremeRouting SLX 9640
  - ExtremeSwitching SLX 9540



### Note

Although many software and hardware configurations are tested and supported for this release, documenting all possible configurations and scenarios is beyond the scope of this document.

For information about other releases, see the documentation for those releases.





# Software Licensing Overview

---

[Software-based licensing overview](#) on page 9  
[Software license terminology](#) on page 10

## Software-based licensing overview

---

You can purchase Extreme licenses per product or per feature. Each switch must have its own licenses. You can purchase licenses separately from your switch vendor.

### How software-based licensing works

A permanent license (for select features on specific units) can be ordered pre-installed in a Extreme device when first shipped from the factory, or later ordered and installed by the customer. In either case, additional licenses can be ordered as needed.

When a license is ordered separately (not pre-installed), a fulfillment email message, along with a *Voucher ID (VID)*, is issued to you by Extreme as proof of purchase. The *VID* and license ID (*LID*) of the Extreme device are used to generate a license key from the Extreme Portal. The license key is contained within a *license file*, which can be uploaded to the switch. You can add the license key to a switch using the **license add** command, or the **license add FTP-URL ftpPath | SCP-URL scpPath** command. Once a license is installed on the SLX-OS switch, you may be prompted to disable and reenble the specific ports to activate the license. The license key is stored in the flash file system on all SLX switch devices.

### License types

The following license types are supported in SLX-OS:

- Permanent licenses - A permanent license has no expiration date and is locked to a single switch or interface module identified by the switch or interface module license ID.
- Self Authenticated Upgrade (SAU) licenses - This license enables the advanced licensed feature set prior to purchasing a license. The SAU license does not require an activation process. You do not need to install a physical license on the SLX-OS platform to use the licensed feature set. You must accept the End-User License Agreement (EULA) through the CLI commands before the system can support the licensed capabilities. Once you accept the EULA, you can configure and begin using the feature on the device. The EULA requires a license to be purchased within 30 days of accepting the license EULA statement through the CLI. The fulfillment e-mail is issued through Extreme once you have paid for the SAU license. The CoE document certifies that you have paid for the license to use the feature on for a specific platform.

## Software license terminology

The following terms are used in this document

- License file - The file produced by the Extreme Portal when the license is generated. The file is uploaded to the device and controls access to a *licensed feature* or feature set.
- License ID (LID) - The identification number that uniquely identifies the device. The LID is used in conjunction with the VID to generate and download a software license from the Extreme Portal. The software license is tied to the LID of the device for which the license was ordered and generated.
- Licensed feature - Any hardware or software feature or set of features that require a valid software license in order to operate on the device.
- Voucher ID (VID) - This unique key, along with the *LID*, is used to generate a software license from the Extreme Portal. The Voucher ID is issued by Extreme when a license is purchased. The Voucher ID is delivered through e-mail which is sent to the customer shortly after the order has completed.

## Licensing rules

The following table lists the license requirements by platform, and the number of ports available through licensing.

**Table 4: License requirements by platform**

Platform/LC	100 GbE/40 GbE ports	100 GbE ports	10 GbE/1 GbE ports	10 GbE/100 GbE ports	License type	POD sets and sizes
SLX 9640-24S and SLX 9640-24S-AC-F	N/A	12 100G ports	N/A	24 10G ports	100 GbE Port Upgrade	<p>By default, the first 4 100 GbE ports are base ports that are enabled by the OS. There is no pre-installation required for the base ports. The 100 GbE Port Upgrade license enables additional ports in increments of 4 ports.</p> <p>Two 100 GbE Port Upgrade licenses (4 ports each) add 8 ports to the SLX 9640-24S and SLX 9640-24S-AC-F switches to bring the total number of 100 GbE ports to 12.</p>

**Table 4: License requirements by platform (continued)**

Platform/LC	100 GbE/40 GbE ports	100 GbE ports	10 GbE/1 GbE ports	10 GbE/100 GbE ports	License type	POD sets and sizes
SLX 9640-24S-12C	N/A	12 100G ports	N/A	24 10G ports	100 GbE Port Upgrade	By default, the first 4 100 GbE ports are base ports that are enabled by the OS. One 100 GbE Port Upgrade pre-installed license adds 8 100 GbE ports to the SLX 9640-24-12C and SLX 9640-24S-AC-F switches to bring the total number of 100 GbE ports to 12.
SLX 9640-24S and SLX 9640-24S-12C	N/A	N/A	N/A	N/A	Advanced Feature SAU License	Advanced features license can be added to the SLX 9640 switches.
SLX 9150-48Y (fiber)	N/A	8 100G ports	N/A	48 10G ports	Advanced Feature SAU License	Advanced features license can be added to the SLX 9150-48Y switches. By default, the base features and port bandwidth are available on this platform.
SLX 9150-48XT 10BASE-T (copper)	N/A	6 100G ports	48 10G ports	N/A	Advanced Feature SAU License	Advanced Feature SAU License can be added to the SLX 9150-48XT 10BASE-T switches. By default, the base features and port bandwidth are available on this platform.

**Table 4: License requirements by platform (continued)**

Platform/LC	100 GbE/40 GbE ports	100 GbE ports	10 GbE/1 GbE ports	10 GbE/100 GbE ports	License type	POD sets and sizes
SLX 9540	N/A	6	24		100 GbE Port Upgrade	Three 100 GbE POD licenses (2 ports each) add 6 ports to the SLX-9540-24S switches to bring the total number of ports to 6.
						100 GbE POD licenses (6 ports) are already pre-installed in the SLX-9540-48S switches.
					Capacity on Demand (COD) for 10GbE ports	One COD license (24 ports) brings 24 1GbE ports to 10GbE on the SLX-9540-24S switches, to bring the total number of 10GbE ports to 48.
						COD license (24 ports) is already pre-installed in the SLX-9540-48S switches.
					Advanced feature SAU License	Advanced features license can be added to the SLX-9540-24S and SLX-9540-48S switches.

The following table provides descriptive details for the license type.

**Table 5: Extreme licenses for SLX-OS**

License	Description	Notes
100 GbE Port Upgrade ( SLX 9640- 24S and SLX 9640 - 24S-AC-F )	For the SLX 9640, this license adds 4 100 GbE ports when additional licenses are purchased in increments of 4 ports each. The base port size is 4 100 GbE ports. You can purchase up to 2 licenses (4 ports each) for a total 12 100 GbE licensed ports. The first license enables ports 29 - 32. The second license enables ports 33 - 36. All 24 10 GbE are base ports. You do not need a license to enable the 10 GbE ports.	When the 100 GbE Port Upgrade license is added, ports that are disabled or shutdown can be re-enabled using the <b>no shutdown</b> command. Ports must be set to the shutdown state using the <b>shutdown</b> command prior to removing a license(s). A trial license is not supported. Dynamic Ports on Demand (DPOD) licensing and the Capacity on Demand (COD) license are not supported on the SLX 9640 platform. The SKU is EN-SLX-9640-4C-POD-P (Feature 100G Port Upgrade).
Pre-installed 100 GbE Port Upgrade ( SLX 9640 -24S-12C	For the SLX 9640, the license is pre-installed and enables 8 100 ports. The pre-installed license enables ports 29 - 36. The base port size is 4 100 GbE ports. By default, ports 1 -28 are enabled by the OS. The total number of 100 GbE ports is 12.	A trial license is not supported. Dynamic Ports on Demand (DPOD) licensing and the Capacity on Demand (COD) license are not supported on the SLX 9640 platform.
Advanced License ( SLX 9640)	The Advanced feature SAU license enables the advanced licensed features prior to purchasing a license. On the SLX 9640 platform, the Advanced Feature license set includes the following features: BGP EPVN, 3rd Party VM, MPLS.	The SKU is: EN-SLX-9640-ADV-LIC-P (Features: Advanced Features).
100 GbE Port Upgrade ( SLX 9540)	For the SLX 9540, this license adds 6 GbE ports for a total of 6 100 GbE licensed ports. The base port size is 0 ports.	
Capacity on Demand (COD) ( SLX 9540)	The COD license adds 24 10 GbE ports for a total of 48 10 GbE licensed ports. The base port capacity includes 24 10 GbE ports without an additional license. All of the 48 1 GbE/10 GbE ports can be used at 1 GbE speed without a license.	
Advanced License ( SLX 9540)	The Advanced Feature SAU license enables the advanced licensed features prior to purchasing a license. On the SLX 9540 platform, the Advanced Feature license set includes BGP EPVN, 3rd Party VM, MPLS, and OptiScale for Internet Routing. The Base Features set includes L2 Protocols including L2 MCT, L3 Protocols (Static + Dynamic), Standard interfaces SNMP, Netconf, REST, and Python scripting.	To enable MPLS features on the SLX 9540 the Advanced feature SAU license is required.

**Table 5: Extreme licenses for SLX-OS (continued)**

License	Description	Notes
Advanced License ( SLX 9150)	The Advanced Feature SAU license enables the advanced licensed features prior to purchasing a license. On the SLX 9150 platform, the Advanced Feature license set supports functionality for BGP EVPN and TPVM (3rd Party VM).	
Advanced License ( SLX 9250)	The Advanced Feature SAU license enables the advanced licensed features prior to purchasing a license. On the SLX 9250 platform, the Advanced Feature license set supports functionality for BGP EVPN and TPVM (3rd Party VM).	

## Licensing considerations

This section lists the generic rules, restrictions, and considerations related to the software licensing:

- A license is tied to the unique LID of the blade or the switch for which the license was generated. Therefore, a license can be used on one switch only. It cannot be used on any other switch or blade.
- More than one license for multiple features can be installed per switch or blade.
- Only one permanent license at a time can be in effect for a licensed feature.
- Licenses are not interchangeable between units.
- Licenses are independent of configuration files and are therefore not affected when you make changes to a configuration file or restore the default configuration, or if the running configuration is overwritten with the default configuration.

## Software licensing configuration tasks

This section describes the configuration tasks for generating and obtaining a software license, and then installing it on the device. Perform the tasks in the order as given in the following list.

Following are the configuration tasks for software licensing:

1. Order the desired license.
2. After ordering the license, you will receive a fulfillment email containing the Voucher ID.
3. Retrieve the LID of the device by entering the **show license id** command on the device. You must use the Line Card LID to obtain licenses for the Line Cards.
4. Log in to the Extreme Portal located here: <https://extremeportal.force.com/ExtrLicenseLanding>. If you do not have an account yet, log in to <https://secure.extremenetworks.com>.
5. Upload the license file to the device.
6. Verify that the license is installed.



### Note

Do not discard the fulfillment email with the VID in case it is needed for technical support or product replacement (RMAs).

*Generating a license*

Before you can use a software license, you must generate it from the Extreme portal.

The following procedure demonstrates how to generate and obtain a software license.

1. Log in to the Extreme Portal at <https://extremeportal.force.com/ExtrLicenseLanding>.

2. If you do not have an Extreme portal account, select **Create a new Extreme Portal account**.  
The following figure shows the Extreme Portal login window.

**Extreme**  
Connect Beyond the Network

**Extreme Portal**

Please review the [Extreme Portal Help](#) article if you have questions or issues logging in.

Email

Password

**Log In**  Remember me

[Reset Password / Forgot Password](#)

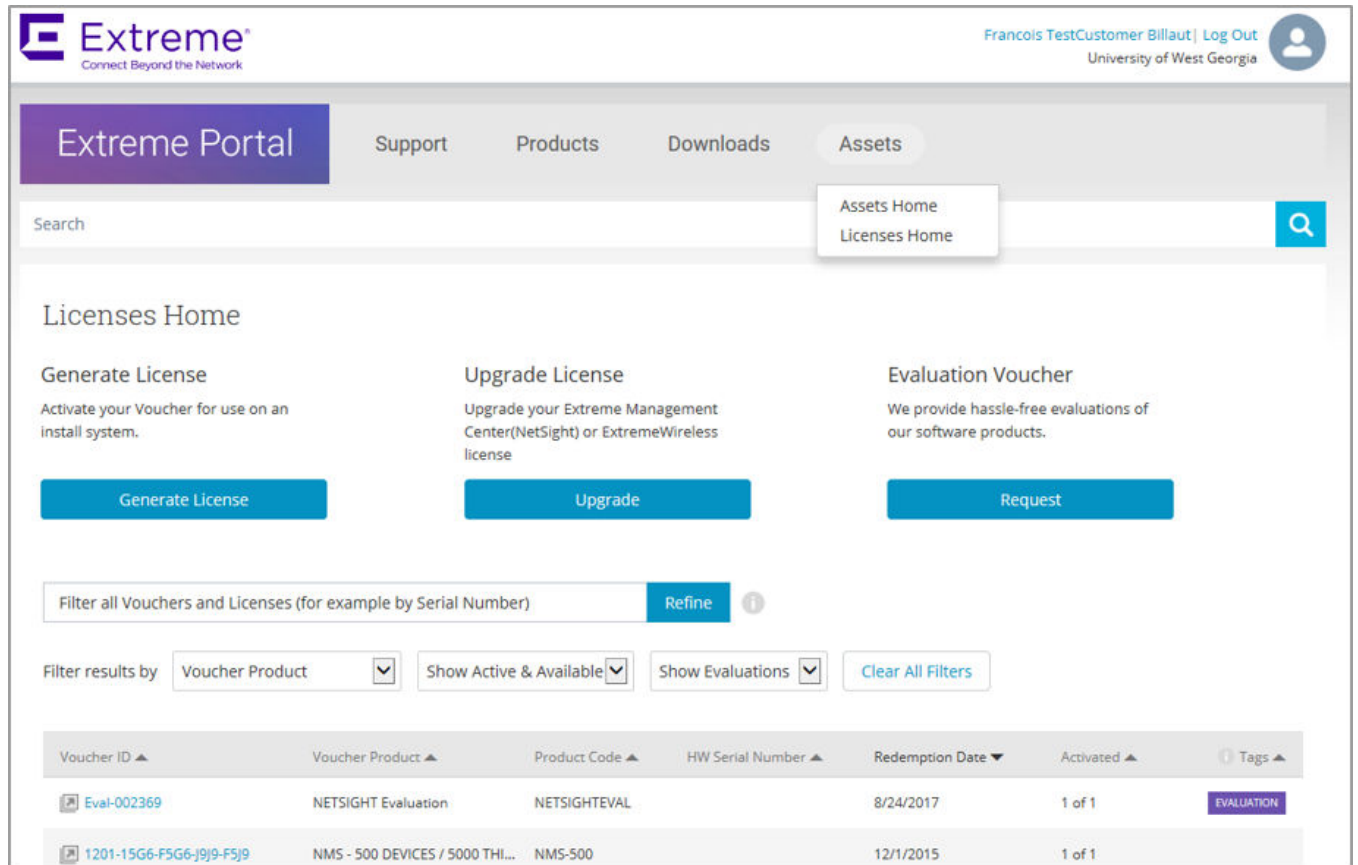
[Create a new Extreme Portal account](#)

Extreme Networks, Inc. employee? [Log In](#)

**Figure 1: Extreme portal login window**

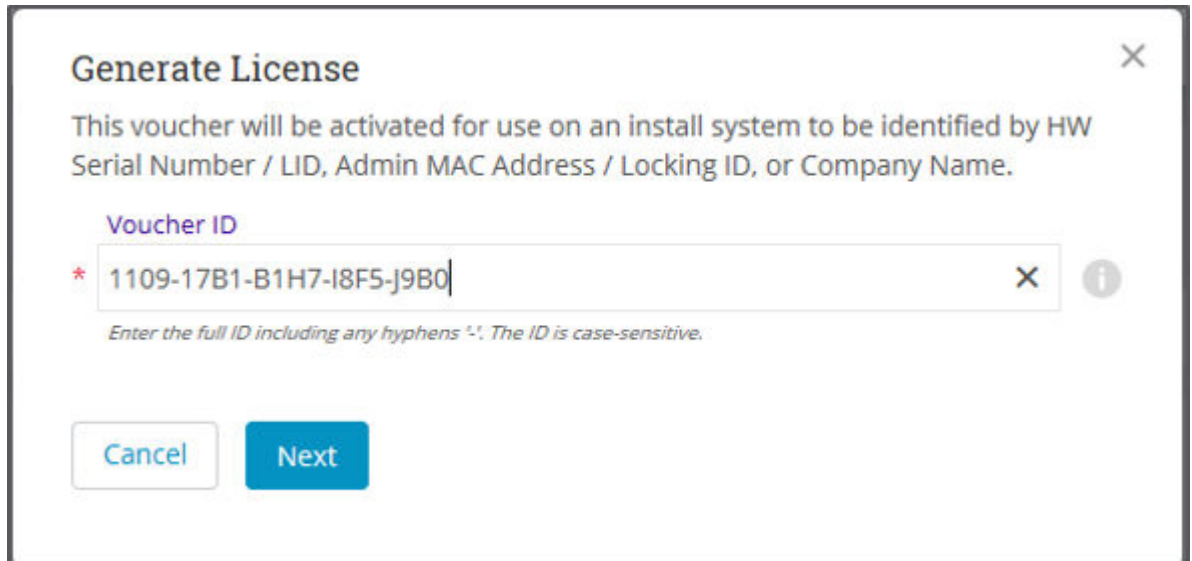


3. Enter your email and password. Click **Log In**.  
The **Licenses Home** window appears.



**Figure 2: Licenses Home window**

4. Select **Assets > Licenses Home** option. Click **Generate License**.  
The **Generate License** window is displayed.



**Generate License**

This voucher will be activated for use on an install system to be identified by HW Serial Number / LID, Admin MAC Address / Locking ID, or Company Name.

Voucher ID

\* 1109-17B1-B1H7-I8F5-J9B0

*Enter the full ID including any hyphens '-'. The ID is case-sensitive.*

Cancel Next

**Figure 3: Generate License window**

5. Enter the VID. Click **Next**.

The VID (previously known as Transaction Keys at Brocade) has 20 alphanumeric characters with hyphens.



Note

Unredeemed Transaction Keys from Brocade can still be redeemed.

- Enter the unique identifier of the HW (or the serial number of the LID). Click **Submit**.



**Note**

You must check the box to agree to the Terms and Conditions.

**Generate License**

This voucher will be activated for use on an install system to be identified by HW Serial Number or LID.

**BR-VDX6720-60VCS-01 S/W, VCS LICENSE FOR VDX6720-60/40**

Please [Create a Case](#) so GTAC can investigate this issue.

**Voucher ID**

\* 1109-1718-J9E4-F5C2-B1F5 i

Enter the full ID including any hyphens '-'. The ID is case-sensitive.

**HW Serial Number or LID**

\* 10:00:50:EB:1A:CD:A2:E0 i

Enter the full ID including any hyphens '-'. The ID is case-sensitive.

\*  You must check this box to acknowledge you agree to the [Terms & Conditions](#)

**Figure 4: HW serial number window**

- The VID is displayed. The example below displays voucher information for a non-capacity license.

Extreme Portal
Support   Products   Downloads   **Assets**

Search 🔍

[< Licenses Home](#)

## Voucher Details

[✎ Edit](#)  
Enter a description here

Voucher ID	1109-17D3-B0J9-E4C2-B1J9	Activated Licenses	1 of 1
Voucher Product	MLX 4-PORT 10-GBE LICENSE UPGD TO (X)	Redeemed By	Francois Billaut
Product Code	BR-MLX-10GX4-XUPG	Redemption Date	11/14/2017
HW Serial Number	<span style="border: 1px solid #007bff; padding: 2px;">2017191</span>	Install Address	RAYTHEON COMPANY, 1001 BOSTON POST RD, Marlborough, MA 01752, United States
HW LID	emtHKJInFLG		
HW Product	MLX 20-PORT 10-GBE/1GBE (M) COMBO MODULE		

License Key ▲	Fulfillment Date ▼	Generated By ▲	Status ▲
<a href="#">Download</a> <span style="background-color: #007bff; color: white; padding: 2px 5px; font-weight: bold;">NEW</span>	11/14/2017	Francois Billaut	Active

**Figure 5: Voucher Details window**

- Click **Download** to download a copy of the license.

A license can be downloaded after license generation or when a unit is queried. The license is not emailed.

In example below, the contents of the XML license are displayed, including the license SKU and license keys.

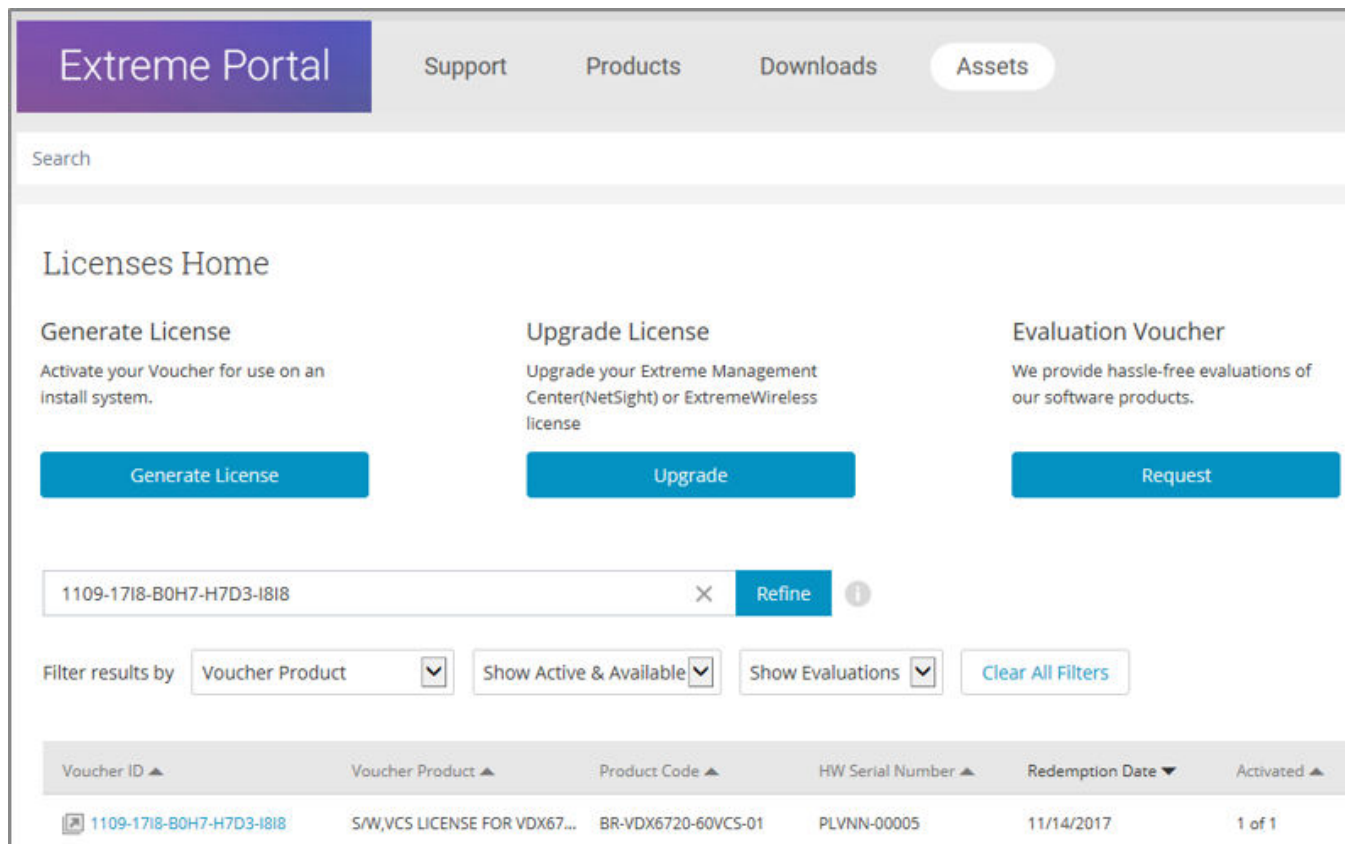
**Figure 6: License file window**

```
<?xml version="1.0" encoding="UTF-8" standalone="true"?>
- <lic:licenseInfo xmlns:lic="http://license.extreme.com/licensefile">
  - <licenseHeader>
    <productName>PORT_100G_40G_UPGRADE</productName>
    <description>PORT_100G_40G_UPGRADE</description>
    <version>1.0</version>
    <dateGenerated>20180124223350367</dateGenerated>
  </licenseHeader>
  - <license>
    <featureName>PORT_100G_40G_UPGRADE</featureName>
    <featureVersion>11.x</featureVersion>
    <licKey>*B 4yK88,0gwrCckKm3FdDWV11JwTQ8SOuYpDyZa5Y24LV59PE6kAErj:11oVSBf0R9fe8PZIBrwlGfj081TQkHVokB7:ZfRIAYudRbLppBRuLGviJ05St6Cc7IES55,G9gVz#</licKey>
  </license>
</lic:licenseInfo>
```

*Querying a license*

- To query a license, select **Assets > Licenses Home** option.
- Enter the SN or LID of the HW asset, or the VID of the SW asset in the **Refine** window box.

The example below displays how to query a license for a VID.



**Figure 7: Querying a license window**

3. Click the **Voucher** ( under the Voucher ID column). The VID is displayed.  
The example below displays voucher information for a non-capacity license.

The screenshot shows the 'Voucher Details' page in the Extreme Portal. The page includes a navigation bar with 'Support', 'Products', 'Downloads', and 'Assets'. A search bar is located at the top right. Below the navigation, there is a breadcrumb link '< Licenses Home' and the title 'Voucher Details'. An 'Edit' button is present with the text 'Enter a description here'. The main content area is divided into two columns of key-value pairs:

Voucher ID	1109-17D3-B0J9-E4C2-B1J9	Activated Licenses	1 of 1
Voucher Product	MLX 4-PORT 10-GBE LICENSE UPGD TO (X)	Redeemed By	Francois Billaut
Product Code	BR-MLX-10GX4-XUPG	Redemption Date	11/14/2017
HW Serial Number	2017191	Install Address	RAYTHEON COMPANY, 1001 BOSTON POST RD, Marlborough, MA 01752, United States
HW LID	emtHKJlnFLG		
HW Product	MLX 20-PORT 10-GBE/1GBE (M) COMBO MODULE		

Below this information is a table with columns for License Key, Fulfillment Date, Generated By, and Status. The first row of data shows a 'Download' button with a 'NEW' tag, a fulfillment date of 11/14/2017, generated by Francois Billaut, and an 'Active' status.

**Figure 8: Voucher details window**



# Software Licensing Tasks

---

- [Installing a license on page 22](#)
- [Displaying a license on page 23](#)
- [Adding or removing a SAU license on page 24](#)
- [Displaying the device license ID on page 25](#)
- [Removing licenses on page 26](#)
- [Troubleshooting licensing issues on page 27](#)
- [License is not properly installed on page 28](#)

## Installing a license

---

Use the following procedures to install licenses on a SLX-OS device.

1. Install the license on the device using one of the following commands:
  - Enter the **license add** [**FTP-URL** *ftpPath* | **SCP-URL** *scpPath*] command. This command adds licenses from an XML-tagged license file.

```
device# license add SCP-URL scp://fvt:mypassword@10.70.5.58//users/
home40/"pray4green/
20141113164801170PORT_UPGRADE.xml
License Added [*B
OXw:jFQ0IZc,t1D12:fZVuQByBOJMeqIoPhjpHK9gJLrcLzYIbEXVmDCd8N4nRyTfdxoGQI93gRS9y10:cf0
0If68JA1f1HZz
MQs4:eiI1C,VbOpx4E6UG8YeXWcaVIBSTVv#]
For license change to take effect, it may be necessary to enable the ports...
```

- Enter the **license add licstr** command followed by the license key. The license key is printed between the XML start <licKey> and end </licKey> tags in the license file. Be sure to copy the entire string, including spaces and non-alphanumeric characters. If the license key includes spaces, you must enclose the entire string in double quotation marks. Repeat this command for each software license key found in the license file.

```
device# license add SCP-URL scp://fvt:mypassword@10.70.5.58//users/
home40/"pray4green/
20141113164801170PORT_UPGRADE.xml
License Added [*B
OXw:jFQ0IZc,t1D12:fZVuQByBOJMeqIoPhjpHK9gJLrcLzYIbEXVmDCd8N4nRyTfdxoGQI93gRS9y10:cf0
0If68JA1f1HZz
MQs4:eiI1C,VbOpx4E6UG8YeXWcaVIBSTVv#]
For license change to take effect, it may be necessary to enable the ports...
```

- Verify that you added the license by entering the **show license** command. The command lists all licensed features currently installed on the device. If the feature is not listed, enter the **license add licstr** command again.

Depending on the license type, you may be prompted to reload the device or to disable and re-enable the chassis or specific ports. The following table indicates the minimal steps you may need to take to make the installed features fully functional after the license add operation is complete. Take the appropriate action as indicated by the command output.

**Table 6: Requirements for activating a license after installation**

License	Description
PORT_100G_40G_UPGRADE	For all applicable platforms, may require enabling the added ports or disabling and then re-enabling the added ports.
PORT_10G_UPGRADE	For all applicable platforms, may require enabling the added ports or disabling and then re-enabling the added ports.
PORT_100G_UPGRADE	For all applicable platforms, may require enabling the added ports or disabling and then re-enabling the added ports.
CAPACITY_ON_DEMAND	For all applicable platforms, requires explicitly manually reserving ports using <b>config license dpod</b> CLI command and then may require enabling the added ports or disabling and then re-enabling the added ports.
ADVANCED_FEATURES	The End-User License Agreement (EULA) must be accepted through the <b>license eula</b> CLI commands before the system can support the licensed capabilities for the SAU license.

## Displaying a license

You can display installed licenses using the **show license** command.

The following example displays the 100G Port Upgrade license and the Advanced features license.

```
device# show license
Chassis:
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  Capacity on Demand license
  Feature name:CAPACITY_ON_DEMAND
  Capacity: 24
  License is Node-Lock and valid
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  100G Port Upgrade license
  Feature name:PORT_100G_UPGRADE
  Capacity: 6
  License is Node-Lock and valid
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  Advanced Features license
  Feature name:ADVANCED_FEATURES
  License is Trust Based
  EULA acceptance date: Thu May 30 09:55:54 2019
```

The following example displays the 100 GbE port upgrade license when 4 100 GbE ports are installed on the SLX 9640 device.

```
device# show license
Chassis:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

    100G Port Upgrade license
    Feature name:PORT_100G_UPGRADE
    Capacity: 4
    License is Node-Lock and valid
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

When there are no licenses installed on the chassis, the **show license** command output displays the following:

```
device# show license
No entries available
```

## Adding or removing a SAU license

You can add a SAU license using the **license eula accept** command. The EULA text can be displayed using the **show license eula** command.

The following example displays the EULA text.

```
device# show license eula
Use of the features enabled via the "license eula accept" CLI requires a license to be purchased within 30 days. By accepting the EULA you indicate that you have read and accept the Extreme End User License Agreement found at the following URL. [https://learn.extremenetworks.com/rs/641-VMV-602/images/Extreme-Networks-End-User-License-Agreement.pdf].
```

When the **license eula accept** command is entered, you are agreeing to purchase a license within a specific timeframe. You can begin using the features immediately.

The following example shows how to accept the EULA for the SAU license (Advanced Features).

```
device# license eula accept ADVANCED_FEATURES
2016/11/24-23:58:11, [SEC-1120], 41,, INFO, SLX9540, License EULA entry added for ADVANCED_FEATURES feature (capacity 0).

EULA accepted for feature [ADVANCED_FEATURES]

Use of the ADVANCED_FEATURES feature requires a license to be purchased within 30 days. By accepting the EULA you indicate that you have read and accept the Extreme End USER License Agreement found at the following URL [https://learn.extremenetworks.com/rs/641-VMV-602/images/Extreme-Networks-End-User-License-Agreement.pdf].
You can decline the EULA acceptance now by entering "license eula decline ADVANCED_FEATURES"
at the CLI prompt; declining the EULA will prevent use of the licensed feature.
```



The **show license** command will also display the SAU license when the EULA is accepted.

```
device# show license
Chassis:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Advanced Features license
Feature name:ADVANCED_FEATURES
License is Trust Based
EULA acceptance date: Thu Nov 24 23:58:11 2016
```

If the SAU license is not accepted using the **license eula accept** command, the Advanced features cannot be used. In the following example for the Guest OS for TPVM feature, the **license eula accept** command was not accepted prior to the configuration. You must accept the SAU license before you can begin using the Advanced features.

```
deviceSLX# tpvm install
ERROR: ADVANCED_FEATURES license is missing. Please install ADVANCED_FEATURES license for
TPVM operation.
device#
```

You can remove a SAU license using the **license eula decline** command. The following example displays removing a SAU license (Advanced features).

```
device# license eula decline ADVANCED_FEATURES

EULA removed for feature [ADVANCED_FEATURES]
```

When the **license eula decline** command is entered, you are no longer able to use the licensed features. Before you can "decline" the licensed features, all configuration settings related to the feature must be restored to default settings.

The following CLI message is displayed when you attempt to configure a feature that requires a SAU license, and you have not accepted the EULA and there is no SAU license installed for that feature.

```
device(config)# router mpls
%Error: Advanced Features License not found.
```

## Displaying the device license ID

The switch license ID identifies the switch for which the license is valid. You will need the switch license ID when you activate a license key.

To display the switch license ID, enter the **show license id** command in privileged EXEC mode.

```
device# show license id
Location                License ID
=====
Chassis                 10:00:D8:84:66:F0:16:FE
```

## Removing licenses

Depending on the license type, you may be prompted to clear license-dependent configurations, reload the switch, or disable and re-enable the chassis or specific ports. The following table indicates the minimal steps you may need to take to remove specific licenses. Take the appropriate action as indicated by the command output.

**Table 7: Requirements for deactivating a license after removal**

License	Description
ADVANCED_FEATURES	All features that have been enabled that depend on the Advanced Features license (MPLS, BGP EVPN, Guest OS for TPVM, etc.) must be disabled first.
CAPACITY_ON_DEMAND	Port reservations for non-Base ports provisioned by the license must be released first.
PORT_100G_UPGRADE	Port reservations for non-Base ports provisioned by the license must be released first.
PORT_10G_UPGRADE	Port reservations for non-Base ports provisioned by the license must be released first.
PORT_100G_40G_UPGRADE	Port reservations for non-Base ports provisioned by the license must be released first.

For some licensed features, you must clear all configurations related to the feature before you can remove the license for that feature. Some features may require you to disable and re-enable selected ports or the entire switch.

Refer to the console output for other specific requirements.

Do the following to remove an installed (non SAU) license.

1. Enter the **show license** command to display the active licenses.
2. Issue the **license remove** command followed by the license key or the feature name.

The license key is case-sensitive and must be entered exactly as shown. If the license key includes spaces, you must enclose the entire string in double quotation marks.

3. Take the appropriate action as indicated by the command output.

Depending on the license type, you may be prompted to clear license-related features, to reboot the switch, or to disable and re-enable the chassis or specific ports.

4. Enter the **show license** command to verify that the license is removed. If there are no license keys, the command output displays "No entries available."



### Note

To remove the license, use the **license remove** command with the *licenseString* operand or use the feature name, followed by the slot number. You cannot display the license key with the **show license** command.

The following example illustrates the display and removal of an 100G port upgrade license by its feature name.

```
device# show license
```

```

Chassis:
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Capacity on Demand license
Feature name:CAPACITY_ON_DEMAND
Capacity: 24
License is Node-Lock and valid
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
100G Port Upgrade license
Feature name:PORT_100G_UPGRADE
Capacity: 6
License is Node-Lock and valid
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Advanced Features license
Feature name:ADVANCED_FEATURES
License is Trust Based
EULA acceptance date: Thu May 30 09:55:54 2019

device# license remove licStr "*B
Cgo7qybrCfwG0Ta7DtU6frX4Qoy,DTUdLsoAshgXF03J0iYvWwSse56HcUNs7V7z3bhvFHuOw7FfY1MAJrxImKL
Tcdp:tjB:P,QU1AzBxli8fWfM6eJqhPfXkVaufGi:8,fm#"
2019/08/21-07:26:33, [SEC-3051], 3230,, INFO, SLX9540, The license key *B
Cgo7qybrCfwG0Ta7DtU6frX4Qoy,DTUdLsoAshgXF03J0iYvWwSse56HcUNs7V7z3bhvFHuOw7FfY1MAJrxImKL
Tcdp:tjB:P,QU1AzBxli8fWfM6eJqhPfXkVaufGi:8,fm# is Removed.

License Removed [*B
Cgo7qybrCfwG0Ta7DtU6frX4Qoy,DTUdLsoAshgXF03J0iYvWwSse56HcUNs7V7z3bhvFHuOw7FfY1MAJrxImKL
Tcdp:tjB:P,QU1AzBxli8fWfM6eJqhPfXkVaufGi:8,fm#]

For license to take effect, it may be necessary to disable/enable ports or switch...

```

The remaining licenses are displayed as shown in the following example.

```

device# show license
Chassis:
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Capacity on Demand license
Feature name:CAPACITY_ON_DEMAND
Capacity: 24
License is Node-Lock and valid
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Advanced Features license
Feature name:ADVANCED_FEATURES
License is Trust Based
EULA acceptance date: Thu May 30 09:55:54 2019

```

The following example displays removing a SAU license (Advanced features).

```

device# license eula decline ADVANCED_FEATURES

EULA removed for feature [ADVANCED_FEATURES]

```

## Troubleshooting licensing issues

Some features require licenses in order to work properly. Non-SAU licenses are created using a switch or Line Card license identifier (LID), so you cannot apply one license to different switches. Before calling your switch support provider, verify that you have the correct licenses installed by using the **show license** command.

## License is not properly installed

If a licensed feature is not functioning, a probable reason is that the license for that feature has not been installed correctly. Either the license was not installed, or it was installed and a required system reboot or other required action was not performed.

If you suspect a license is not properly installed, complete the following steps.

1. In privileged EXEC mode, enter the **show license** command to display the currently installed licenses.

```
device# show license
Chassis:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Capacity on Demand license
Feature name:CAPACITY_ON_DEMAND
Capacity: 24
License is Node-Lock and valid
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
100G Port Upgrade license
Feature name:PORT_100G_UPGRADE
Capacity: 6
License is Node-Lock and valid
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Advanced Features license
Feature name:ADVANCED_FEATURES
License is Trust Based
EULA acceptance date: Thu May 30 09:55:54 2019
```

2. If the Port Upgrade license appears in the **show license** command output, but the feature does not work for the expected ports, the probable cause is that the affected ports were not re-enabled after installing the license or that the Port Upgrade capacity is insufficient for the number of ports that are being used.



### Note

After adding a Port Upgrade license, you must disable and re-enable all affected ports.

3. If the license does not appear in the **show license** command output, then it was not installed. In privileged EXEC mode, enter the **license add licstr** command to install the license. For Port Upgrade licenses, you must also disable and enable the switch or port.

```
device# license add licstr "*B
OXw:jFQ0IZc,t1D12:fZVuQByBOJMeqIoPhjpHK9gJLrcLzYIbEXVmDCd8N4nRyTfdxoGQI93gRS9y10:cf00If
68JA1flHZzMQs4:eiIlC,VbOpx4E6UG8YeXWcaVIBSTVv#"
2014/11/13-16:41:16, [SEC-3051], 5615, SW/0 | Active, INFO, MYSWITCH, The license key
*B
OXw:jFQ0IZc,t1D12:fZVuQByBOJMeqIoPhjpHK9gJLrcLzYIbEXVmDCd8N4nRyTfdxoGQI93gRS9y10:cf00If
68JA1flHZzMQs4:eiIlC,VbOpx4E6UG8YeXWcaVIBSTVv#
License Added [*B
OXw:jFQ0IZc,t1D12:fZVuQByBOJMeqIoPhjpHK9gJLrcLzYIbEXVmDCd8N4nRyTfdxoGQI93gRS9y10:cf00If
68JA1flHZzMQs4:eiIlC,VbOpx4E6UG8YeXWcaVIBSTVv#]
For license change to take effect, it may be necessary to enable ports...
```



# Dynamic Ports on Demand Licensing

---

[Capacity on Demand and Dynamic Ports on Demand overview](#) on page 29

[Managing automatic POD port assignments](#) on page 30

[Mapping port assignments to a POD port set](#) on page 30

[Activating the Dynamic POD feature](#) on page 30

[Displaying the Dynamic POD assignments](#) on page 31

[Overriding Dynamic POD assignments](#) on page 32

[Reserving a port assignment](#) on page 32

[Releasing a port from a POD set](#) on page 33

## Capacity on Demand and Dynamic Ports on Demand overview

---

Capacity on Demand (COD) and Dynamic Ports on Demand (POD) provides a flexible mechanism for allocating port licenses that you can purchase to extend the base functionality of the SLX 9540 switches. The additional ports can be enabled after you install the appropriate license keys. The Dynamic POD feature assigns port licenses based on your connectivity choices. Any port on the switch can claim a free assignment from the pool of available POD licenses. The COD licenses require explicit manual port assignment for non-base allowance ports before the port can be used at 10 GbE port speed.



### Note

When adding a Dynamic POD license to a platform that does not support Dynamic POD, you will be allowed to add the license, but the license display will show that the Dynamic POD license is not supported on the platform.

In a Dynamic POD system, each port can be associated with one of two port sets:

- Base port set — Ports that can be enabled without any Port Upgrade license.
- Port Upgrade license port set — Ports that are assigned after all the Base port set have been used or assigned; these are associated with the existence of a Port Upgrade or Capacity on Demand license.



### Note

The 100 GbE/40 GbE, 10 GbE, and 100 GbE Port Upgrade licenses are supported using a base port set plus the ports that are available as specified by the port capacity in the respective port upgrade. These licenses are supported only on the SLX 9540 switches.



### Note

Licenses are based on the license ID and are not interchangeable between units.

---

## Managing automatic POD port assignments

---

The Dynamic POD feature is only used on the 100 GbE ports of the SLX 9540 platform . With the Dynamic POD feature, you can use the base port set plus the number of additional ports you purchased. All ports that do not receive a POD assignment and are trying to come online will go offline. The **show ip interface brief** and **show interface ethernet slot/port** commands display the reason for the port-disabled status as related to POD licensing.

The Dynamic POD mechanism detects the ports that have active links, and makes assignments based on the remaining pool of vacancies:

- If the count of assigned ports is below the number of ports in the combined Base allowance plus the capacity provided by the purchased POD set, additional dynamic assignments can be made at a later time as new links are established. If a port comes online, that port can get assigned if you still have vacancies in your POD set.
- If the number of detected active links is greater than the Base allowance plus the number of ports in the purchased POD set, port assignments are made in the order in which the ports come online until the purchased limit is reached. Because the time it takes for each port to come online varies, the order in which ports are assigned to a given POD set cannot be guaranteed.

If the given assignment order does not align with your intended use of the ports, you can make adjustments using the **dpod slot/port reserve** or the **dpod slot/port release** configuration commands. Refer to [Overriding Dynamic POD assignments](#) on page 32 for more information.

---

## Mapping port assignments to a POD port set

---

For all platforms that support DPOD, ports are associated with the Port Upgrade license in the order in which they come online and automatically receive a license assignment from the pool of unassigned ports in the POD set. The first ports that receive a POD assignment are associated with the base port set. When all ports in the base port set are assigned, the next ports that come online receive assignments from the Port Upgrade license port set.

The association of a specific port to a POD set matters only when you want to remove a Port Upgrade license from the system. Sufficient assigned ports must be released from the DPOD Port Upgrade or COD reservations before the license can be removed. Refer to [Releasing a port from a POD set](#) on page 33 for more information.

---

## Activating the Dynamic POD feature

---

Use the following procedure to activate the Dynamic POD feature.

1. Verify the current states of the ports with the **show ip interface brief** command.  
The command output indicates whether a port is licensed.
2. Install the Port Upgrade license.
3. Use the **shutdown** and **no shutdown** commands to disable and re-enable the ports.
4. Use the **show ip interface brief** command to verify the newly activated ports.

5. Use the **show interface ethernet slot/port** command to display port details.

The following example shows a device without any Port Upgrade license installed on an interface module. The 12 ports in the base port set are online and assigned. The remaining 2 ports are unassigned and down.

```
device# show ip interface brief
Flags: I - Insight Enabled      U - Unnumbered interface
Interface      IP-Address      Vrf              Status           Protocol
=====
Ethernet 0/1   unassigned      default-vrf      up               up
up
Ethernet 0/2   unassigned      default-vrf      up               up
up
Ethernet 0/3   unassigned      default-vrf      up               up
up
Ethernet 0/4   unassigned      default-vrf      up               up
up
Ethernet 0/5   unassigned      default-vrf      up               up
up
Ethernet 0/49  unassigned      default-vrf      administratively down  down (No 100G/
40G Port Upgrade License)
Ethernet 0/50  unassigned      default-vrf      administratively down  down (No 100G/
40G Port Upgrade License)
```

The following example displays details for a single port that is offline because it does not have a Port Upgrade license.

```
device# show interface ethernet 0/49
Ethernet 0/49 is down, line protocol is down (No 100G/40G Port Upgrade License)
Hardware is Ethernet, address is 0005.1eb6.0a25
Current address is 0005.1eb6.0a25
Tracking status: Disabled
Tracked interfaces: None
Pluggable media present, Media type is sfp
Interface index (ifindex) is 1744896001
MTU 2500 bytes
LineSpeed: Auto - 10000 Mbit, Duplex: Full
Flowcontrol rx: on, tx: on
```

## Displaying the Dynamic POD assignments

To display the Dynamic POD assignments, enter the **show dpod** command.

The **show dpod** command provides a summary of POD license status and POD license assignments.

In the following example from the SLX 9540, all 48 10 GbE ports and 6 100 GbE ports are licensed and potentially available.

```
device# show dpod
48 10G ports are available in this switch
6 100G ports are available in this switch
COD license is installed
100G Port Upgrade license is installed
Dynamic POD method is in use

48 10G port assignments are provisioned for use in this switch:
24 10G port assignments are provisioned by the base switch allowance
24 10G port assignments are provisioned by the COD license
2 10G ports are assigned to the base switch allowance or installed licenses:
2 10G ports are assigned to the base switch allowance
0 10G ports are assigned to the COD license
```

```
10G ports assigned to the base switch allowance:
0/7, 0/9
10G ports assigned to the COD license:
None
10G ports that are not assigned:
0/1, 0/2, 0/3, 0/4, 0/5, 0/6, 0/8, 0/10, 0/11, 0/12
0/13, 0/14, 0/15, 0/16, 0/17, 0/18, 0/19, 0/20, 0/21, 0/22
0/23, 0/24, 0/25, 0/26, 0/27, 0/28, 0/29, 0/30, 0/31, 0/32
0/33, 0/34, 0/35, 0/36, 0/37, 0/38, 0/39, 0/40, 0/41, 0/42
0/43, 0/44, 0/45, 0/46, 0/47, 0/48
46 10G license reservations are still available for use by unassigned ports

6 100G port assignments are provisioned for use in this switch:
0 100G port assignments are provisioned by the base switch allowance
6 100G port assignments are provisioned by the 100G Port Upgrade license
3 100G ports are assigned to the base switch allowance or installed licenses:
0 100G ports are assigned to the base switch allowance
3 100G ports are assigned to the 100G Port Upgrade license
100G ports assigned to the base switch allowance:
None
100G ports assigned to the 100G Port Upgrade license:
0/49, 0/50, 0/53
100G ports that are not assigned:
0/51, 0/52, 0/54
3 100G license reservations are still available for use by unassigned ports
```

## Overriding Dynamic POD assignments

You can override the automatic port license assignments by releasing Dynamic POD assignments from a port and by reserving an assignment for a specific port.

### Reserving a port assignment

Reserving an assignment for a port assigns that port to a POD or COD license regardless of whether the port is online or offline. Reserving assignments allocates the POD license to specified ports. This operation overrides automatic port assignments. The reserved assignment will not be available to other ports that come online. To reserve an assignment for a port, a free assignment must be available.

1. Enter the **show dpod** command to determine the unassigned ports.  
If all ports are assigned, select a port to release its POD assignment. Follow the instructions in [Releasing a port from a POD set](#) on page 33 to release a port from its POD assignment. Once the port is released, you can reuse the assignment for another port.
2. Enter the global configuration mode by issuing the **configure terminal** command.
3. Select the port for which you want to reserve an assignment and enter the **dpod reserve** command.



4. Enter the **exit** command to return to the global configuration mode before you reserve another port.

```
device# configure terminal
Entering configuration mode terminal
device(config)# dpod 0/15 reserve
device(config-dpod-0/15)# exit
```



#### Note

Which reboot of the switch is NOT required to make DPOD licensing effective, be aware that License reservations or removals do not persist across switch reboots and power cycles. To make them persistent, save the configuration changes by issuing the use **copy running-config startup-config** command before you reboot the switch.

5. Save the configuration changes.

```
device# copy running-config startup-config
```

6. Reboot the switch.
7. Enter the **show running-config dpod** command to verify the port is reserved.

```
device# show running-config dpod 0/15
dpod 0/15
  reserve
!
```

## Releasing a port from a POD set

Once a port has been assigned to a Dynamic POD license port set, it remains licensed (or "reserved") until you remove the port from the port set. You remove a port from the port set by releasing the port with the **dpod release** command. Releasing a port removes it from the Dynamic POD license port set; the port appears as unassigned until it comes back online.

To prevent a port from coming back online and taking a POD assignment, disable the port and save the running configuration. This action will disable the port persistently.

A port POD assignment can only be released if the port is currently offline. Use the **shutdown** command to disable the port or use the **chassis disable** command to disable the switch if you plan to release multiple ports.

1. Enter the global configuration mode by issuing the **configure terminal** command.
2. Select the interface for the port that you wish to disable using the **interface slot/port** command.
3. Enter the **shutdown** command to take the port offline.
4. Enter the **exit** command to return to the global configuration mode before you release the port.
5. Enter the **dpod release** command to remove the port from the POD license.
6. Enter the **exit** command to return to the global configuration mode before you reserve another port.

```
device# configure terminal
Entering configuration mode terminal
device(config)# interface 0/15
device(conf-if-te-0/15)# shutdown
device(conf-if-te-0/15)# exit
```

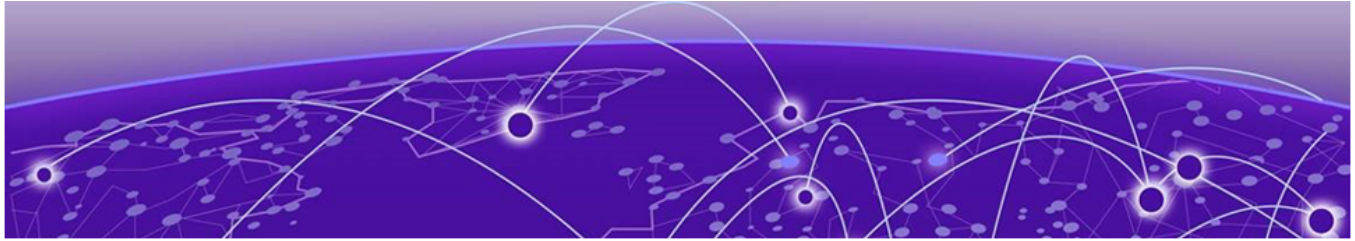
```
device(config)# dpod 0/15 release
device(config-dpod-0/15)# exit
```

7. Enter **exit** to return to privileged EXEC mode.
8. Enter the **show dpod** command to verify that the port is no longer assigned to a POD set.
9. Enter the **enable chassis** command to bring the switch back online.
10. Save the configuration changes.

```
device# copy running-config startup-config
```

**Note**

Do not release a port unless you plan to disconnect the optical link or disable the port persistently. If you leave the link in a state where the port could be brought online, the POD mechanism will detect this unassigned port and attempt to reassign it to a port set.



# SLX OS Licensed Features and Part Numbers

[SLX 9540, SLX 9640, SLX 9150, and SLX 9250 part numbers](#) on page 35

## SLX 9540, SLX 9640, SLX 9150, and SLX 9250 part numbers

The table below lists the supported part numbers and ports or POD licenses for the SLX 9540 , SLX 9640, SLX 9150 , and SLX 9250 devices.

**Table 8: Part Numbers**

Product	Ports/POD licenses	Part Number	Orderable Aftermarket license	Description
SLX 9640	Advanced feature license	EN-SLX-9640-24S	BR-SLX-9640-ADV-LIC	ADVANCED FEATURE LICENSE
		EN-SLX-9640-24S-AC-F		
		EN-SLX-9640-24S-12C		
		EN-SLX-9640-24S-12C-AC-F		
	100 Port upgrade license	EN-SLX-9640-24S	EN-SLX-9640-4C-POD-P	Feature 100G Port Upgrade
		EN-SLX-9640-24S-AC-F		
SLX 9540	Advanced feature license	BR-SLX-9540-24S-AC-F	BR-SLX-9540-ADV-LIC-P	ADVANCED FEATURE LICENSE
	Upgrade license	BR-SLX-9540-24S-AC-R	BR-SLX-9540-24S-COD-P	UPGRADE 24X1GE TO 24X10GE/1GE
	POD license	BR-SLX-9540-24S-DC-F	BR-SLX-9540-2C-POD-P	PORTS ON DEMAND FOR 2X100GE/40GE

**Table 8: Part Numbers (continued)**

Product	Ports/POD licenses	Part Number	Orderable Aftermarket license	Description
SLX 9150	Advanced feature license	SLX9150-ADV-LIC-P		ADVANCED FEATURE LICENSE
SLX 9540	Upgrade license	BR-SLX-9540-24S-COD-P		Upgrade 24X1 GbE ports to 24X10 GbE/ 1 GbE ports
	POD license	BR-SLX-9540-2C-POD-P		Ports on Demand license to enable 2X100 GbE/ 40 GbE ports
	Advanced feature license	BR-SLX-9540-ADV-LIC-P		Advanced Feature License for MPLS, BGP-EVPN, CE 2.0, NSX (SLX 9540-24S, SLX 9540-48S)
SLX 9250	Advanced feature license	SLX9250-ADV-LIC-P		ADVANCED FEATURE LICENSE