



# Switch Engine™ Feature License Requirements

for Version 32.4

9037722-00 Rev AB  
May 2023



Copyright © 2023 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](https://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         |
| Related Publications.....   | 6         |
| ExtremeXOS and Switch Engine Publications.....                            | 6         |
| Open Source Declarations.....   | 6         |
| Send Feedback.....  | 6         |
| Help and Support.....   | 6         |
| Subscribe to Product Announcements.....                                   | 7         |
| <b>License Overview.....</b>  | <b>8</b>  |
| <b>Overview for Universal Hardware Switches.....</b>                      | <b>9</b>  |
| Feature Licenses.....   | 9         |
| Additional General License Information.....                               | 10        |
| Installing and Uninstalling Licenses on Universal Switches.....           | 10        |
| Obtaining and Installing Licenses.....                                    | 10        |
| Uninstalling Licenses Temporarily.....                                    | 11        |
| Transferring Licenses.....  | 11        |
| Displaying the Installed License Levels and Feature Licenses.....         | 12        |
| Factory Default (Evaluation) License for Universal Hardware Switches..... | 12        |
| <b>Switch License Features.....</b>                                       | <b>13</b> |
| Base License Features.....  | 13        |
| Premier License Features.....   | 16        |
| <b>Feature Licenses.....</b>  | <b>17</b> |
| MACsec Platform Support.....  | 19        |
| ExtremeCloud IQ Platform Support.....                                     | 20        |
| MPLS Feature License.....   | 21        |
| MAC Security Feature License.....   | 21        |



# Preface

---

Read the following topics to learn about:

- The meanings of text formats used in this document.
- Where you can find additional information and help.
- How to reach us with questions and comments.






## 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                      |
|  | Caution     | Risk of personal injury, system damage, or loss of data |
|  | Warning     | Risk of severe personal injury                          |

**Table 2: Text**

| Convention                             | Description   |
|--|---|
| screen displays                        | This typeface indicates command syntax, or represents information as it is displayed 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 names</b>                       | 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 text</b>                   | Bold text indicates command names, keywords, and command options.  |
| <i>italic text</i>                 | 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[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. |

---

## Related Publications

---

### ExtremeXOS and Switch Engine Publications

- *Switch Engine 32.4 Command Reference Guide*
- *Switch Engine 32.4 Feature License Requirements*
- *Switch Engine 32.4 User Guide*
- *Switch Engine 32.4 Release Notes*
- *ExtremeXOS Quick Guide*
- *Extreme Hardware/Software Compatibility and Recommendation Matrices*
- *Extreme Optics Compatibility*
- *Switch Configuration with Chalet for ExtremeXOS 21.x and Later*
- *ACL Solutions Guide*
- *Using AVB with Extreme Switches*

### Open Source Declarations

Some software files have been licensed under certain open source licenses. More information is available at: [www.extremenetworks.com/support/policies/open-source-declaration/](http://www.extremenetworks.com/support/policies/open-source-declaration/).

### Send Feedback

---

The Information Development team at Extreme Networks has made every effort to ensure that this document is accurate, complete, and easy to use. We strive to improve our documentation to help you in your work, 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.
- Broken links or usability issues.

To send feedback, do either of the following:

- 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.

### Help and Support

---

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 Product Announcements

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

1. Go to [The Hub](#).
2. In the list of categories, expand the **Product Announcements** list.
3. Select a product for which you would like to receive notifications.
4. Select **Subscribe**.
5. To select additional products, return to the **Product Announcements** list and repeat steps 3 and 4.

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

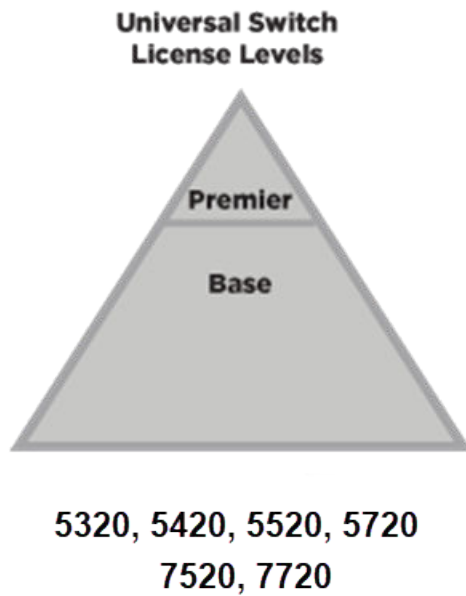


# License Overview

---

The ExtremeSwitching family of Universal switches includes two different license levels: Base and Premier.

The following figure illustrates that the Premier license level builds on the features of the Base license.



**Figure 1: License Levels for Universal Switches**

In previous releases, non-Universal Hardware and Universal switch license levels correlated in the following way:

Premier = Core

Base = Advanced Edge + AVB





# Overview for Universal Hardware Switches

---

[Installing and Uninstalling Licenses on Universal Switches](#) on page 10  
[Displaying the Installed License Levels and Feature Licenses](#) on page 12  
[Factory Default \(Evaluation\) License for Universal Hardware Switches](#) on page 12

This document explains the license levels and feature licenses available for universal hardware switches, and lists the features that they support.

Switch Engine software supports the following license levels for the universal hardware switches:

- **Base**—included as standard (see [Base License Features](#) on page 13)
- **Premier** (see [Premier License Features](#) on page 16)

The Base license provides a basic feature set and the Premier license adds additional functionality.

**Table 4: Standard and Upgrade Licenses for Universal Hardware Switches**

| Switch platform       | Base     | Premier |
|-----------------------|----------|---------|
| ExtremeSwitching 5320 | Standard | Upgrade |
| ExtremeSwitching 5420 | Standard | Upgrade |
| ExtremeSwitching 5520 | Standard | Upgrade |
| ExtremeSwitching 5720 | Standard | Upgrade |
| Extreme 7520          | Standard | Upgrade |
| Extreme 7720          | Standard | Upgrade |

## Feature Licenses

---

To supplement the license levels, additional capabilities can be added by purchasing feature licenses (see [Feature Licenses](#) on page 17).

## Additional General License Information

Software licenses are stored in the EEPROM and, after enabled, persist through reboots, software upgrades, power outages, and reconfigurations. The keys are unique to the switch, but can be transferred (see [Transferring Licenses](#) on page 11).

If you attempt to execute a command and you either do not have the required license or have reached the limits defined by the current license level, the system displays one of the following messages:

```
Error: This command cannot be executed at the current license level.
Error: You have reached the maximum limit for this feature at this license level.
```

## Installing and Uninstalling Licenses on Universal Switches

This section explains how to obtain and install/uninstall licenses on universal hardware switches.

### Obtaining and Installing Licenses

For universal hardware switches, you can activate a license on the switch using either of the following methods:

1. Manual activation by obtaining the license activation file from Support Portal.
2. Automated activation using ExtremeCloud IQ. For information about using ExtremeCloud IQ for bulk automated license activation, go to <https://www.extremenetworks.com/support/documentation/extremecloud-iq/>.

For manual license generation and installation:

1. Follow manual activation instructions for license generation available on the [Extreme Portal: Products > Products Home > ExtremeSwitching > Universal > EXOS \(for your switch\) > Activation Instructions](#).
2. Load the license file onto the switch using either of the following commands:

```
download [url url {vr vrname} | image [active | inactive] [[hostname |
ipaddress] filename {{vr} vrname} {block-size block_size}] {partition}
{install {reboot}}
```

```
tftp get [ ip-address | host-name] { vr vr_name } { block-size
block_size } remote-file local-file} {force-overwrite}
```

To copy from a USB: `cp old_name new_name` specifying `/usr/local/ext`. For example: `cp /usr/local/ext/old_name /usr/local/cfg/new_name`.

You can place the license file anywhere within the user-visible file system (for example: `/usr/local/*`).

3. To install the license, use the following command:

```
install license file filename {slot slot}
```

This command installs all of the license features contained in the selected license file to the specified slot (node).

## Uninstalling Licenses Temporarily

You can temporarily uninstall a license from a switch. This enables you to retain the license entitlement on the switch, and thus, the original license can be used to reinstall the license. You can use this option to temporarily disable a license.

To uninstall a license temporarily from a universal hardware switch, use the following command:

```
uninstall license file filename [{revoke revocation_file} | withhold ]  
{slot slot}
```

 using the **withhold** option.

To temporarily uninstall a specific license feature, such as MAC Security (MACsec), from a universal hardware switch, use the following command:

```
uninstall license product product_name [revoke revocation_file |  
withhold] {slot slot}
```

 using the **withhold** option.

## Transferring Licenses

You can permanently remove a license, which enables you to transfer the license to another switch. This should only be done when preparing to return a defective switch for a replacement switch (RMA).

The `uninstall license file filename` command accepts *filename* as a `.lic` file that contains one or more licenses to be uninstalled. This is the license file that was used to install license.

The `uninstall license product product_name` command accepts *product\_name* as the name of the license product to be uninstalled. This is the product name as it appears with the `show licenses` command.

- To uninstall a license permanently from a universal hardware switch, use the following command:

```
uninstall license product product_name [revoke revocation_file |  
withhold] {slot slot}
```

 using the **revoke** option.

- To permanently uninstall a specific license product, such as PRD-5000-MACSEC, from a universal hardware switch, use the following command:

```
uninstall license product product_name [revoke revocation_file |  
withhold] {slot slot}
```

 using the **revoke** option.

The **revoke** option invalidates the feature license and generates a revocation certificate, which is the first step to release the license entitlement back to the license entitlement manager (LEM). If the specified file name (for *revocation\_file*) does not have an `.rvk` extension, it is automatically appended.

To transfer a license from a defective unit to a working unit:

1. Go to the [Extreme Portal](#).
2. Select **Asset > Licenses Home**.
3. Select **License Transfer**.
4. Enter the serial numbers of the defective unit and the replacement unit, and the RMA/case number.

## Displaying the Installed License Levels and Feature Licenses

You can display the license level and feature licenses installed on your Extreme Networks switch by using the `show licenses {[slot slot |all]} {detail}` command.

## Factory Default (Evaluation) License for Universal Hardware Switches

New universal hardware switches include a Factory Default (Evaluation) License to use all features (excluding MACsec). This Evaluation license is equivalent to a Premier license. You can configure all features, except MACsec, without restrictions and save the configuration.

The evaluation periods is 30 days. If after 30 days you have not obtained and installed a Premier license (see [Obtaining and Installing Licenses](#) on page 10) and you reboot the switch, the switch will effectively have only Base license (see [Table 4](#) on page 9) capabilities.



### Note

The ExtremeSwitching 5320 series includes an additional Factory Default 4-port 10G Evaluation license. This license allows you to activate the last four SFP+ ports for 10G Ethernet uplink.

To extend the evaluation period, you can use the following commands:

To enable a trial license, issue the command `debug epm enable trial-license`.

To clear a trial license, issue the command `debug epm clear trial-license`. A reboot is required before the clear license takes effect.



### Note

Enabling a newly obtained license requires clearing the trial license, and then rebooting the switch.



# Switch License Features

---

[Base License Features](#) on page 13

[Premier License Features](#) on page 16

## Base License Features

---

The Base License includes the features in the following table:

**Table 5: Switch Engine Base License Features**

| Switch Engine Software Feature  | Supported Platforms   |
|---|---|
| AVB <ul style="list-style-type: none"><li>• Generalized Precision Time Protocol (GPTP)</li><li>• Multiple VLAN Registration Protocol (MVRP)</li><li>• Multiple Stream Registration Protocol (MSRP)</li><li>• Platform Support</li></ul> | All platforms, except 7520 and 7720. Universal platforms have the AVB Feature License included in the Advanced Edge or Base License. You do not need to separately purchase and install the AVB Feature License for these switches. |
| BGP Auto-peering  | All platforms   |
| BGP peers—Universal switches are allowed up to 2 manually configured BGP peers on the default VR with a base license.   | All platforms   |
| CLEARFlow   | All platforms   |
| Convergence End Point (CEP) detection   | All platforms   |
| DHCPv4: <ul style="list-style-type: none"><li>• DHCPv4 server</li><li>• DHCv4 client</li><li>• DHCPv4 relay</li><li>• DHCPv4 smart relay</li></ul>  | All platforms   |
| DHCPv6: <ul style="list-style-type: none"><li>• DHCPv6 relay</li><li>• DHCPv6 prefix delegation snooping</li><li>• DHCPv6 client</li><li>• DHCPv6 smart relay</li><li>• DHCPv6 remote ID</li></ul>                                      | All platforms   |

**Table 5: Switch Engine Base License Features (continued)**

| Switch Engine Software Feature  | Supported Platforms       |
|---|---------------------------|
| Direct Attach—based on the IEEE version of VEPA, eliminates the virtual switch layer, simplifying the network and improving performance. Direct Attach enables data center simplification by reducing network tiers from four or five tiers to just two or three tiers, depending on the size of the data center. | All platforms             |
| EAPS Advanced Edge—multiple physical rings, and "common links", also known as "shared port".  | All platforms             |
| ERPS-more domains (allows 32 rings with matching ring ports) and multi-ring support   | All platforms             |
| ESRP-Full   | All platforms             |
| ESRP-Virtual MAC  | All platforms             |
| Extended Edge Switching   | 5420 and 5520             |
| Extreme Network Virtualization (XNV)  | All platforms except 5320 |
| IP address security: <ul style="list-style-type: none"> <li>• DHCP snooping</li> <li>• Trusted DHCP server</li> <li>• Source IP lockdown</li> <li>• ARP validation</li> </ul>   | All platforms             |
| IP Flow Information Export (IPFIX)  | 5420, 5520, 5720          |
| IP NAT  | Not supported             |
| IP security: <ul style="list-style-type: none"> <li>• DHCP Option 82—L3 mode</li> <li>• DHCP Option 82—L3 mode VLAN ID</li> <li>• Disable ARP learning</li> <li>• Gratuitous ARP protection</li> <li>• DHCP secured ARP / ARP validation</li> <li>• Source IP lockdown</li> </ul>                                 | All platforms             |
| IPv4 unicast routing, including static routes   | All platforms             |
| IPv4 multicast routing, including static routes<br><b>Note:</b> This feature has limitations in the Edge and Advanced Edge licenses. See the <a href="#">Switch Engine 32.4 User Guide</a> .  | All platforms             |
| IPv4 Duplicate Address Detection (DAD)  | All platforms             |
| IPv6 unicast routing, including static routes   | All platforms             |
| IPv6 interworking—IPv6-to-IPv4 and IPv6-in-IPv4 configured tunnels  | All platforms             |
| IPv6 DAD without CLI management   | All platforms             |
| IPv6 DAD with CLI management  | All platforms             |

**Table 5: Switch Engine Base License Features (continued)**

| Switch Engine Software Feature   | Supported Platforms  |
|--|--|
| Keychain Manager   | All platforms  |
| Local-only, user-created virtual routers (VR)  | 5320-24T/24P   |
| Multi-Switch Link Aggregation Group (MLAG)   | All platforms  |
| Multinetting for forwarding  | All platforms  |
| ONEPolicy  | All platforms  |
| OSPFv2-Edge (limited to max of 4 active interfaces)  | All platforms  |
| OSPFv2 Auto-peering  | All platforms  |
| OSPFv3-Edge (limited to max of 4 active interfaces)  | All platforms  |
| PIM—Universal switches are not subject to the maximum number of PIM IPv4 interfaces (4) that pertains to other switch models.          | All platforms  |
| PIM-SM-Edge  | All platforms  |
| PIM snooping<br><b>Note:</b> This feature has limitations in the Base license. See the <a href="#">Switch Engine 32.4 User Guide</a> . | All platforms  |
| Policy based routing (PBR) for IPv4  | All platforms  |
| Policy based routing (PBR) for IPv6  | All platforms  |
| Protocol-based VLANs   | All platforms  |
| PSTag  | 5420 and 5520  |
| Python scripting   | All platforms  |
| RIP v1/v2  | All platforms  |
| RIPng  | All platforms  |
| Routing access policies  | All platforms  |
| Route maps   | All platforms  |
| SummitStack (switch stacking using native or dedicated ports)  | Not supported  |
| SummitStack-V (switch stacking using dual-purpose data ports)  | All platforms. See the specific models listed in the "Support for Alternate Stacking Ports" section of the <a href="#">Switch Engine 32.4 User Guide</a> . |
| SyncE  | Not supported  |
| System virtual routers (VRs)   | All platforms  |
| UDP Forwarding   | All platforms  |
| UDP BootP relay forwarding   | All platforms  |

**Table 5: Switch Engine Base License Features (continued)**

| Switch Engine Software Feature  | Supported Platforms                           |
|---|---|
| User-created virtual routers (VRs)<br>Virtual router and forwarding (VRF) | 5320-48T/48P, 5420, 5520, 5720,<br>7520, 7720 |
| VLAN aggregation  | All platforms                                 |
| VRRP  | All platforms                                 |
| VXLAN   | All platforms                                 |

## Premier License Features

The Premier License includes the features in the following table:

**Table 6: Switch Engine Premier License Features**

| Switch Engine software feature                     | Supported platforms                       |
|--|---|
| Anycast RP   | All platforms                             |
| Anycast RP Using PIM (RFC 4610)                    | All platforms                             |
| BGP4 and MBGP (BGP4+) for IPv4 ECMP                | All platforms                             |
| BGP4 and MBGP (BGP4+) for IPv6                     | All platforms                             |
| EVPN   | All platforms                             |
| GRE tunneling                                      | All platforms                             |
| Integrated Application Hosting (IAH)               | ExtremeSwitching 5720 and<br>Extreme 7520 |
| IS-IS for IPv4                                     | All platforms                             |
| IS-IS for IPv6                                     | All platforms                             |
| MSDP   | All platforms                             |
| OSPFv2 "Full" (not limited to 4 active interfaces) | All platforms                             |
| OSPFv3 "Full" (not limited to 4 active interfaces) | All platforms                             |
| PIM DM "Full"                                      | All platforms                             |
| PIM SM "Full"                                      | All platforms                             |
| PIM SSM "Full"                                     | All platforms                             |





# Feature Licenses

---

[MPLS Feature License](#) on page 21

[MAC Security Feature License](#) on page 21

The Switch Engine software features are listed in the following table are managed as feature licenses. Feature licenses are distributed in one of the following forms:

- **In Switch Engine software** (standard software component)—You must purchase a license to use the feature.
- **Modular software package** (XMOD file, so named because of its .xmod file extension)—You must request the XMOD file from your supplier and install it.

For feature license and installation instructions, see *Installing a Modular Software Package* in the [Switch Engine 32.4 User Guide](#).



#### Note

Secure Shell 2 (SSH2) is not provided as a feature license. It is incorporated into the main Switch Engine software image and is not provided as an XMOD. However, SSH2 contains strong encryption algorithms that heighten the export controls required in the US and other countries. When downloading the Switch Engine software image, you are required to verify that you meet the export clearance requirements. For more information, see *Software Upgrade and Boot Options* in the [Switch Engine 32.4 User Guide](#).

For more information on SSH2, see *Using Secure Shell 2* in the [Switch Engine 32.4 User Guide](#).

**Table 7: Switch Engine Feature Licenses**

| Feature License  | Feature  | Platform support  | XMOD Required |
|--|--|---|---------------|
| MPLS Feature License<br>See <a href="#">MPLS Feature License</a> on page 21. | <ul style="list-style-type: none"> <li>• MPLS</li> <li>• LDP</li> <li>• Static LSPs</li> <li>• OSPF-TE</li> <li>• MPLS label</li> <li>• EXP bit replacement and classification</li> <li>• RSVP-TE</li> <li>• VPLS / H-VPLS for VLANs</li> <li>• VPLS STP redundancy</li> <li>• VPLS with ESRP redundancy</li> <li>• VPLS with EAPS redundancy</li> <li>• Fast Reroute (FRR)</li> <li>• Support for PW counters</li> <li>• User Virtual Routers</li> <li>• L3VPN</li> </ul> | ExtremeSwitching 5520 series switches.  | No            |
| AVB Feature License  | <ul style="list-style-type: none"> <li>• Generalized Precision Time Protocol (GPTP)</li> <li>• Multiple VLAN Registration Protocol (MVRP)</li> </ul>   | All platforms, except 7520 and 7720.<br>All Universal Hardware platforms have the AVB Feature License included in the Base License. You do not need to separately purchase and install the AVB Feature License for supported Universal platforms. | No            |

**Table 7: Switch Engine Feature Licenses (continued)**

| Feature License  | Feature   | Platform support                                       | XMOD Required |
|--|---|--|---------------|
|  | <ul style="list-style-type: none"> <li>Multiple Stream Registration Protocol (MSRP)</li> <li>Platform Support</li> </ul>  |  |               |
| MAC Security License<br>See <a href="#">MAC Security Feature License</a> on page 21. | MAC Security licensing.   | See <a href="#">MACsec Platform Support</a> on page 19 | No            |
| ExtremeCloud™ IQ Agent   | ExtremeCloud IQ provides device discovery, basic monitoring, visibility into homogenous stacking, ability to configure an optional user-defined VR and address of the server for to connect to. For more information about ExtremeCloud IQ, go to <a href="https://www.extremenetworks.com/extremecloud-iq/">https://www.extremenetworks.com/extremecloud-iq/</a> . | See <a href="#">ExtremeCloud IQ Agent Support</a>      | Yes           |

## MACsec Platform Support

**Table 8: MACsec Supported Platforms**

| Platform              | Ports  | LRM/MACsec Adapter Required? |
|-----------------------|--|------------------------------|
| ExtremeSwitching 5320 | All ports of all models except stacking ports.<br><br><b>Note:</b> A 10G license must be present to support an LRM/MACsec Adapter with 10G-LRM optics. | No                           |
| ExtremeSwitching 5420 | All ports of all models except stacking ports.   | No                           |

**Table 8: MACsec Supported Platforms (continued)**

| Platform              | Ports   | LRM/<br>MACsec<br>Adapter<br>Required<br>? |
|-----------------------|---|--|
| ExtremeSwitching 5520 | All ports, except 5520-VIM-4X and 24X 10G ports | No   |
| ExtremeSwitching 5720 | All ports of all models except stacking ports.  | No   |

## ExtremeCloud IQ Platform Support

**Table 9: Supported Platforms**

| Switch Series         | Switch Models   |
|-----------------------|---|
| ExtremeSwitching 5320 | 5320-48T-8XE<br>5320-48P-8XE<br>5320-24T-8XE<br>5320-24P-8XE<br>5320-16P-4XE<br>5320-16P-4XE-DC   |
| ExtremeSwitching 5420 | 5420F-8W-16P-4XE<br>5420F-24P-4XE<br>5420F-24S-4XE<br>5420F-24T-4XE<br>5420F-16MW-32P-4XE<br>5420F-16W-32P-4XE<br>5420F-48P-4XE<br>5420F-48P-4XL<br>5420F-48T-4XE<br>5420M-24T-4YE<br>5420M-24W-4YE<br>5420M-16MW-32P-4YE<br>5420M-48T-4YE<br>5420M-48W-4YE |
| ExtremeSwitching 5520 | 5520-24T<br>5520-24W<br>5520-48T<br>5520-48W<br>5520-12MW-36W<br>5520-24X<br>5520-48SE  |
| ExtremeSwitching 5720 | 5720-24MW<br>5720-24MXW<br>5720-48MW<br>5720-48MXW  |
| Extreme 7520          | 7520-48Y-8C<br>7520-48XT-6C   |
| Extreme 7720          | 7720-32C  |

## MPLS Feature License

MPLS support, including VPLS L2 VPNs and L3 VPNs, can be obtained from Extreme Networks at an additional cost, as a feature license.

A separate feature license must be purchased for each switch that runs MPLS and VPLS.



### Note

ExtremeSwitching 5520 series switches have the MPLS Feature set included in the Premier License. You do not need to separately purchase and install the MPLS Feature License for these switches.

After you enable the feature license, the feature CLI commands are visible; without an enabled MPLS feature license, you do not see any feature commands on the console.

## MAC Security Feature License

Use of the MAC Security (MACsec) feature requires a slot-based MACsec Feature License.

Slot-based MACsec licenses have the following behaviors:

**Table 10: MACsec License Behavior**

|                          | No License  | License Installed   |
|--------------------------|---|---|
| <b>Standalone Switch</b> | <ul style="list-style-type: none"> <li>The command <code>show macsec</code> is the only available command.</li> <li>MACsec cannot be configured or enabled.</li> </ul>                            | <ul style="list-style-type: none"> <li>All MACsec commands are available.</li> <li>MACsec can be configured and enabled.</li> </ul>                   |
| <b>Stack</b>             | <ul style="list-style-type: none"> <li>All MACsec commands are available.</li> <li>MACsec can be configured on MACsec-capable slots.</li> <li>If configured, MACsec cannot be enabled.</li> </ul> | <ul style="list-style-type: none"> <li>All MACsec commands are available.</li> <li>MACsec can be configured and enabled on licensed slots.</li> </ul> |



### Note

In a stack, any slot configured with a MACsec-capable module (with `configure slot slot module module_type`) can be configured for MACsec, even if the slot is not physically present, or if the slot is present, but does not have a valid MACsec license installed.