



# Switch Engine Release Notes

Software Version 32.7.1

9038070-00 Rev AC  
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# Preface

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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.

## Conventions

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To help you better understand the information presented in this guide, the following topics describe the formatting conventions used for notes, text, and other elements.

### 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
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.

**Table 3: Command syntax (continued)**

Convention	Description
...	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.

## Platform-Dependent Conventions

Unless otherwise noted, all information applies to all platforms supported by Switch Engine software, which are the following:

- ExtremeSwitching® switches
- SummitStack™

When a feature or feature implementation applies to specific platforms, the specific platform is noted in the heading for the section describing that implementation in the Switch Engine command documentation (see the Extreme Documentation page at [www.extremenetworks.com/documentation/](http://www.extremenetworks.com/documentation/)). In many cases, although the command is available on all platforms, each platform uses specific keywords. These keywords specific to each platform are shown in the Syntax Description and discussed in the Usage Guidelines sections.

## Terminology

When features, functionality, or operation is specific to a device family, such as ExtremeSwitching, the family name is used. Explanations about features and operations that are the same across all product families simply refer to the product as the *device*.

## Send Feedback

The User Enablement 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, email us at [documentation@extremenetworks.com](mailto:documentation@extremenetworks.com).

Provide as much detail as possible including the publication title, topic heading, and page number (if applicable), along with your comments and suggestions for improvement.

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## Help and Support

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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 2800. 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

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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.



## Related Publications

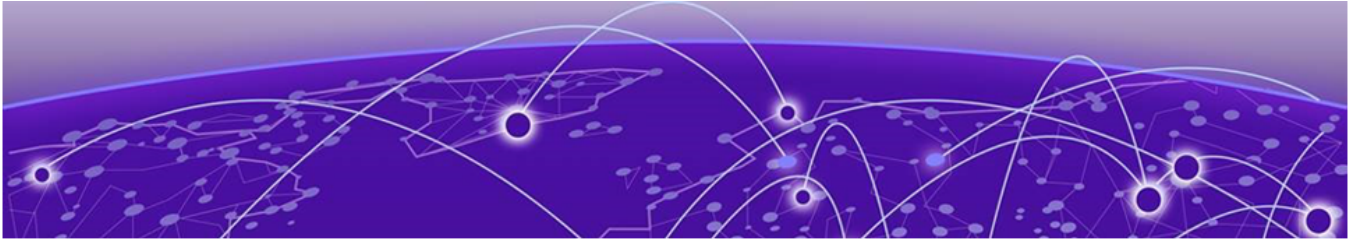
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### Switch Engine Publications

- *Switch Engine 32.7.1 Command Reference Guide*
- *Switch Engine 32.7.1 Feature License Requirements*
- *Switch Engine 32.7.1 User Guide*
- *Switch Engine 32.7.1 Release Notes*
- *Extreme Hardware/Software Compatibility and Recommendation Matrices*
- *Extreme Optics Compatibility*
- *Switch Configuration with Chalet for ExtremeXOS 21.x and Later*

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# Overview

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These release notes document Switch Engine 32.7.1, which adds features and resolves software deficiencies.



# New Hardware Supported in Switch Engine 32.7.1

The following new hardware is supported in Switch Engine 32.7.1:

**Table 4: 4120 Series Switches**

4120-24MW-4Y	24 port stackable MultiGig switch with 24 10/100/1000/2500BaseT 90W POE ports, 4 1Gb/10Gb/25Gb SFP28 ports, 2 QSFP28 stacking ports. Includes Fans, 1 Fixed AC PSU, 1 unpopulated modular PSU slot
4120-48MW-4Y	48 port stackable MultiGig switch with 48 10/100/1000/2500BaseT 90W POE ports, 4 1Gb/10Gb/25Gb SFP28 ports, 2 QSFP28 stacking ports. Includes Fans, 1 Fixed AC PSU, 1 unpopulated modular PSU slot

**Table 5: 4220 Series Switches**

4220-8X	8 10G unpopulated SFP+, internal fixed PSU, fans
4220-12P-4X	12 10/100/1000BASET FDX/HDX PoE+, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-12T-4X	12 10/100/1000BASET FDX/HDX, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-24P-4X	24 10/100/1000BASET FDX/HDX PoE+, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-24T-4X	24 10/100/1000BASET FDX/HDX, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-48P-4X	48 10/100/1000BASET FDX/HDX PoE+, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-48T-4X	48 10/100/1000BASET FDX/HDX, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-4MW-8P-4X	4 1Gb/2.5Gb 802.3bt, 8 10/100/1000BASET FDX/HDX PoE+, 4 10G unpopulated SFP+, internal fixed PSU, fans

**Table 5: 4220 Series Switches (continued)**

4220-4MW-20P-4X	4 1Gb/2.5Gb 802.3bt, 20 10/100/1000BASET FDX/HDX PoE+, 4 10G unpopulated SFP+, internal fixed PSU, fans
4220-8MW-40P-4X	8 1Gb/2.5Gb 802.3bt, 40 10/100/1000BASET FDX/HDX PoE+, 4 10G unpopulated SFP+, internal fixed PSU, fans

**Table 6: ExtremeSwitching 5320 Series Switches**

5320-24T-4X-XT	24 10/100/1000BaseT full/half duplex capable ports, 4 1G/10G SFP+ ports, 1 fixed AC power supply
5320-24T-24S-4XE-XT	24 10/100/1000BaseT full/half duplex MACsec capable ports, 24 100fx/1G SFP ports, 4 1G/10G SFP+ ports, 1 fixed AC power supply



# Security Information

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[Linux Kernel](#) on page 13

[OpenSSL Version](#) on page 13

The following section covers important security information for Switch Engine 32.7.1.

## Linux Kernel

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Switch Engine 32.7.1 uses Linux Kernel 5.10.

## OpenSSL Version

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Switch Engine 32.7.1 uses FIPS openssl-fips-2.0.16.



# Upgrading Switch Engine

For instructions about upgrading Switch Engine software, see *Software Upgrade and Boot Options* in [Switch Engine 32.7.1 User Guide](#).

A Switch Engine core image (.xos file) must be downloaded and installed on the alternate (non-active) partition. If you try to download to an active partition, the system displays the following error message: `Error: Image can only be installed to the non-active partition..` A Switch Engine modular software package (.xmod file) can still be downloaded and installed on either the active or alternate partition.



## Note

New ExtremeSwitching 5420 and 5520 PoE switches use a new version of the PoE microcontroller that prevents the switch from downgrading to older EXOS versions and prevents operating system switchover to unsupported VOSS versions.

The following error message is displayed during the downgrades to older versions:

```
Error: Failed to download image - summit_arm-31.6.1.3.xos does not
include compatible PoE microcontroller support. See the User Guide for
information on installing a newer software release. See the
Hardware/Software Compatibility and Recommendation Matrices to verify the
supported releases.
```

The ExtremeSwitching 5420 and 5520 PoE switches that use a new version of the PoE microcontroller can be identified for by checking the PoE firmware revision (5.0 or later) by entering the `show inline-power stats` command (line four):

```
# show inline-power stats
Inline-Power Slot Statistics
Firmware status           : Operational
Firmware revision         : 5.0.0b4
Total ports powered       : 3
Total ports awaiting power : 20
Total ports faulted       : 0
Total ports disabled      : 1
```



## Newly Purchased Switches Require Software Upgrade

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Newly delivered switches typically have pre-GA (general availability) Switch Engine software installed. You should promptly upgrade the Switch Engine software to the latest version available by visiting the [Extreme Portal](#).

For information about upgrading the Switch Engine software, see the *Switch Engine Upgrade Process* topic in the *Software Upgrade and Boot Options* chapter of the *Switch Engine 32.7.1 User Guide*.



# Default Switch Engine Settings

The following table shows the default settings for Switch Engine starting with version 31.6, and shows any changes that have been made to these settings and in what version these changes were made.

**Table 7: Default Switch Engine Settings**

Feature	31.6 and later	32.4 and later
1G behavior in 10G ports (5420 and 5520 series switches)	Autoneg OFF for port when 1G optic is inserted in a 10G port	
Account Lockout	After 3 consecutive login failures, account is locked for 5 minutes. <sup>a</sup>	
Auto-Discovery for Universal Hardware	Enabled.	
AVB	Disabled.	
BFD Strict Session Protection	Disabled.	
BGP	Disabled.	
Bluetooth	Enabled.	
BOOTP Relay	Disabled.	
CDP	Enabled.	
Configuration auto save	Disabled.	
Clear-flow	Disabled.	
Diagnostics	Admin level privileges required to show diagnostics. <sup>a</sup>	
DHCP	Disabled.	
DNS Cache Resolver and Analytics	Disabled.	
IPFIX	Disabled.	
IP NAT	Disabled.	
EAPS	Disabled.	
EDP	Enabled.	
ELRP	Disabled.	

<sup>a</sup> If you choose enhanced security mode when initially setting up the switch or after running `unconfigure switch all`.



**Table 7: Default Switch Engine Settings (continued)**

Feature	31.6 and later	32.4 and later
ESRP	Disabled.	
Extended Edge Switching (VPEX)	Disabled.	
ExtremeCloud IQ	Enabled	
FEC	Enabled on Native 25Gb ports.	
Identity Management	Disabled.	
IGMP	Enabled, set to IGMPv2 compatibility mode.	
IGMP Snooping	Enabled.	
Image Integrity Check	Disabled.	
IP Route Compression	Enabled.	
ISIS	Disabled.	
LLDP	Enabled.	
Log	Admin level privileges required to show log. <sup>a</sup>	
Logging memory buffer	Generate an event when the logging memory buffer exceeds 90% of capacity. <sup>a</sup>	
MAC Security	Disabled.	
MLD	Disabled.	
MLD Snooping	Disabled.	
MPLS	Disabled.	
MSRP	Disabled.	
MSTP	Enabled.	
NetLogin	All types of authentication are disabled.	
NTP	Disabled.	
ONEPolicy	Disabled.	
Policy rule model	Hierarchical (Unless upgrading from 30.5 with a saved configuration set to access list.)	
OpenFlow	Disabled.	
OSPF	Disabled.	
OVSDB	Disabled.	
Passwords	Plain text password entry not allowed. <sup>a</sup>	
PIM	Disabled.	

**Table 7: Default Switch Engine Settings (continued)**

Feature	31.6 and later	32.4 and later
PIM Snooping	Disabled.	
PoE Fast PoE Perpetual PoE	Enabled. Disabled. Disabled.	
RADIUS	Disabled for both switch management and network login.	
RIP	Disabled.	
RMON	Disabled. However, even in the disabled state, the switch responds to RMON queries and sets for alarms and events.	
sFlow	Disabled.	
SNMP server	Disabled. <sup>a</sup>	
SSH	Disabled.	
Stacking-support	Enabled.	Disabled for Extreme 7520 and 7720 only.
Stacking auto-discovery	Enabled.	
STP	Enabled.	
Syslog	Disabled.	
TACACS	Disabled.	
Telnet	Enabled. <sup>a</sup>	
VPEX IP Multicast Replication	BPE	
VPLS	All newly created VPLS instances are enabled.	
Watchdog	Enabled.	
Web HTTP server	Enabled. <sup>a</sup>	
Web HTTPS server	Disabled. <sup>a</sup>	



# Switch Engine Image File Names

---

You can identify the appropriate image or module for your platform based on the file name prefix of the image.

**Table 8: Switch Engine Image Types (Prefixes)**

Switches	Image File Type (Prefix)
4120	rzg2 Example: rzg2-32.7.1.x.xos
4220, ExtremeSwitching 5320, 5420, 5520	summit_arm Example: summit_arm-32.7.1.x.xos
ExtremeSwitching 5720, 7520, 7720	onie Example: onie-32.1.1.6.x86_64.xos



# New and Corrected Features in Switch Engine 32.7.1

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[Basic CLI Support for 4000 Series](#) on page 20

[Improvements to the CLI Interactive Startup Script for Static IP Configuration](#) on page 20

[DHCP Fingerprinting for DHCP Snooping](#) on page 21

[ExtremeSwitching 5720 Series PTP Transparent Clock Support](#) on page 21

[Set Autonegotiation to Legacy Default Mode](#) on page 21

[HTTPS and HTTP Are Both Available By Default](#) on page 21

This section lists the new and corrected features supported in the 32.7.1 software:

## Basic CLI Support for 4000 Series

---

The 4000 Series switches are designed for easy-to-use cloud management. The 4000 Series switches can be managed by either of the native cloud management options ExtremeCloud IQ or ExtremeCloud IQ Site Engine, avoiding the need for complex on-switch provisioning through a direct console interface and issuing commands in the Command Line Interface (CLI). The CLI in 4000 Series switches provides rudimentary capabilities for establishing management connectivity and basic monitoring.

See the *4000 Series User Guide* for this version of Switch Engine for detailed information on these Cloud-managed devices.

## Supported Platforms

4000 Series

## Improvements to the CLI Interactive Startup Script for Static IP Configuration

---

Version 32.7.1 adds a management connectivity section to the initial CLI Safe Defaults script. If Auto-provisioning (ZTP+) is not successful or desired, you can perform manual IP configuration interactively as part of the `run provisioning` CLI command.

The CLI command `configure switch safe-default-script`, which was used in prior releases to run the startup script, has been deprecated, and the `run provisioning`

command should be used instead. The deprecated command `configure switch safe-default-script` is still valid when entered completely at the CLI.

## Supported Platforms

All platforms.

## DHCP Fingerprinting for DHCP Snooping

---

Version 32.7.1 adds DHCP Fingerprinting information to the DHCP snooping CLI command. Telegraf support is also added in this release.

## Supported Platforms

All platforms.

## ExtremeSwitching 5720 Series PTP Transparent Clock Support

---

Version 32.7.1 adds PTP (IEEE 1588v2) Transparent Clock support on ExtremeSwitching 5720 series switches.

## Supported Platforms

ExtremeSwitching 5720 series switches.

## Set Autonegotiation to Legacy Default Mode

---

Version 32.7.1 adds a CLI command that lets you switch to *legacy default mode* for autonegotiation for 10G ports with 1G optics inserted.

## Supported Platforms

All platforms.

## HTTPS and HTTP Are Both Available By Default

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Version 32.7.1 enables HTTPS as a default under certain conditions so that both HTTP and HTTPS are active and available for use at the same time.

## Supported Platforms

All platforms.



# Changing the Network Operating System

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ExtremeSwitching Universal Hardware switches can run two different operating systems: Switch Engine (default) or Fabric Engine.

## Making Your Initial Network Operating System Selection

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You can make your initial selection of the operating system using:

- **ExtremeCloud IQ** (see [ExtremeCloud IQ Agent Support](#) on page 24)—You can select your network operating system when purchasing your switch, which associates the switch serial number with your desired network operating system, which then causes the desired network operating system to be loaded during ExtremeCloud onboarding. For more information about using ExtremeCloud IQ, go to <https://www.extremenetworks.com/support/documentation/extremecloud-iq/>.
- **ExtremeCloud IQ Site Engine**— see documentation for version 22.3 or later
- **Manually during boot-up:**
  - **Bootloader**—When you see the message Starting Default Bootloader ...Press and hold the <spacebar> to enter the bootrom, press and hold the **space bar** until the boot menu is displayed (you have 30 seconds):

```
*** 5320-48T-8XE Boot Menu ( 3.4.2.8 ) ***

EXOS: Default
EXOS: Primary 32.1.1.6
EXOS: Secondary 32.1.1.6
EXOS: Primary 32.1.1.6 with default configuration
EXOS: Secondary 32.1.1.6 with default configuration
EXOS: Rescue
Change the switch OS to VOSS
Run Manufacturing Diagnostics
Update bootloader
Reboot system
```

Use the **up** and **down** arrow keys to select Change the switch OS to VOSS, and then press **Enter**.



### Note

The 5720, 7520, and 7720 Series use the **GRUB** menu. There is no need to press and hold the **space bar**. Use the **up** and **down** arrow keys to navigate the menu.

- **Safe defaults mode start-up menu**—When the question `Would you like to change the switch OS to VOSS? [y/N/q]` is displayed:
  - For Switch Engine, type `N`.
  - For Fabric Engine, type `y`.

Continue to log onto the switch. For more information about logging onto the switch, see the [Switch Engine 32.7.1 User Guide](#).

## Changing Your Network Operating System

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You can change your network operating system selection at any time.



### Caution

Changing your network operating systems deletes all configuration files, debug information, logs, events, and statistics information of the previous network operating system.



### Note

If you anticipate ever changing the operating system to Fabric Engine, and you want to statically assign IP addresses on the DHCP server, then it is recommended to assign them based on the DHCP client ID. For more information about this issue, see the [Using a BOOTP or DHCP Server](#) topic in the [Switch Engine 32.7.1 User Guide](#).

- **ExtremeCloud IQ**—See <https://www.extremenetworks.com/support/documentation/extremecloud-iq/>
- **Extreme Management Center**—See [Extreme Management Center User Guide](#)
- **CLI Command**—run the `download [url url {vr vrname} | image [active | inactive] [[hostname | ipaddress] filename {{vr} vrname} {block-size block_size}] {partition} {install {reboot}}` command specifying a VOSS image.



### Note

Do *not* use the **active**, **inactive**, and **partition** options. They are not applicable for Fabric Engine.



# ExtremeCloud IQ Agent Support

Switch Engine supports ExtremeCloud IQ. For network administrators looking for unified management of access points, switches, & routers, ExtremeCloud IQ is a cloud-driven network management application that:

- simplifies network operations through an easy to use and intuitive interface, including minimal touch onboarding of devices
- provides ultimate flexibility in deployment choice, cloud platform choice, OS choice
- offers unlimited data duration for more informed networking decisions



### Important

Check the ExtremeCloud IQ release notes to ensure support for your version has been added before upgrading.

This release supports device discovery, basic monitoring, visibility into homogenous stacking, and the ability to configure an optional user-defined virtual router (VR) and address of the server for ExtremeCloud IQ agent to connect to. These values are used instead of any auto-detected values.

For more information about ExtremeCloud IQ, go to <https://www.extremenetworks.com/support/documentation/extremecloud-iq/>.

**Table 9: Supported Platforms**

Switch Series	Switch Models
4120*	4120-24MW-4Y 4120-48MW-4Y
4220*	4220-8X 4220-12P-4X 4220-12T-4X 4220-24P-4X 4220-24T-4X 4220-48P-4X 4220-48T-4X 4220-4MW-8P-4X 4220-4MW-20P-4X 4220-8MW-40P-4X



**Table 9: Supported Platforms (continued)**

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

\* - See *4000 Series User Guide* for this version of Switch Engine for detailed information on these Cloud-managed devices.



# Extreme Hardware/Software Compatibility and Recommendation Matrices

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*ExtremeXOS and Switch Engine Software Support* provides information about the minimum version of software required to support switches.

The Extreme Optics Compatibility website displays supported hardware platforms, technical specifications, and usage considerations for pluggable optical devices (transceivers and cables) used in all Extreme Networks operating environments. To access the site, open <https://optics.extremenetworks.com/EXOS/> in a web browser.

To find the recommended Switch Engine releases for Universal Hardware platforms, see *ExtremeXOS and Switch Engine Release Recommendations*.

The latest versions of this and other Switch Engine guides are at: [www.extremenetworks.com/documentation/](http://www.extremenetworks.com/documentation/).



## Compatibility with ExtremeCloud IQ Site Engine

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Switch Engine 32.7.1 is compatible with the version of ExtremeCloud IQ Site Engine as shown in this table: [http://emc.extremenetworks.com/content/common/releasenotes/extended\\_firmware\\_support.htm](http://emc.extremenetworks.com/content/common/releasenotes/extended_firmware_support.htm)

Switch Engine 32.7.1 is compatible with ExtremeCloud IQ - Site Engine version 22.3 or later. Older versions (including Extreme Management Center) will not recognize devices running Switch Engine.



## Supported MIBs

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The Extreme Networks management information bases (MIBs) are located on the Extreme Portal in the Downloads section. Log in to the Extreme Portal to view and download.

When you provide your serial number or agreement number, the MIBs are available under each release.

For detailed information on which MIBs and SNMP traps are supported, see the *Extreme Networks Proprietary MIBs* and *MIB Support Details* sections in the [Switch Engine 32.7.1 User Guide](#).



## Tested Third-Party Products

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The following third-party products have been tested for Switch Engine 32.7.1.

### Tested RADIUS Servers

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The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS



# Extreme Switch Security Assessment

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## DoS Attack Assessment

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Tools used to assess DoS attack vulnerability:

- Network Mapper (NMAP)

## ICMP Attack Assessment

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Tools used to assess ICMP attack vulnerability:

- SSPing
- Twinge
- Nuke
- WinFreeze

## Port Scan Assessment

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Tools used to assess port scan assessment:

- Nessus



# Limits

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- [Limits Overview](#) on page 32
- [Base License Limits](#) on page 34
- [Premier License Limits](#) on page 71
- [Notes for Limits Tables](#) on page 79

This chapter summarizes the supported limits in Switch Engine 32.7.1.

## Limits Overview

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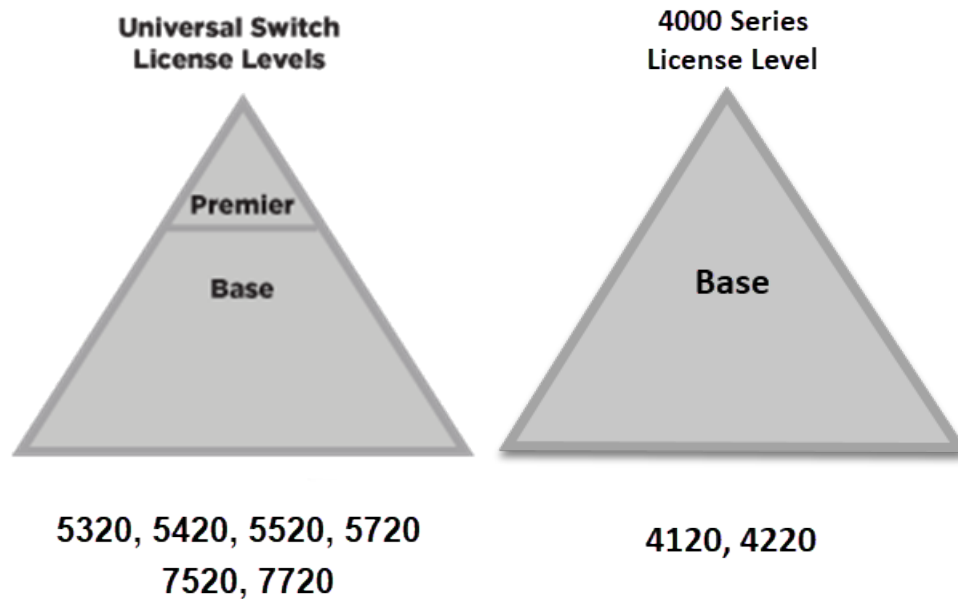
The limits data is grouped by license level that contains the associated features:

- [Base License Limits](#) on page 34
- [Premier License Limits](#) on page 71

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

The following figure illustrates that each license level builds on the features of the license level below it. For example, the Premier license includes all of the features in the Base license, plus the features in the Premier license level.





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

For more information about licenses, see [Switch Engine 32.7.1 Feature License Requirements](#).

The following tables summarize tested metrics for a variety of features, as measured in a per-system basis unless otherwise noted. These limits may change, but represent the current status. The contents of this table supersede any values mentioned in the Switch Engine books.

The scaling and performance information shown in the following tables is provided for the purpose of assisting with network design. It is recommended that network architects and administrators design and manage networks with an appropriate level of network scaling “head room.” The scaling and performance figures provided have been verified using specific network topologies using limited switch configurations. There is no guarantee that the scaling and performance figures shown are applicable to all network topologies and switch configurations and are provided as a realistic estimation only. If you experience scaling and performance characteristics that you feel are sufficiently below what has been documented, contact Extreme Networks technical support for additional assistance.

The route limits shown in the following tables for IPv4 and IPv6 routing protocols are software limits only. The actual hardware limits may be higher or lower than the software limits, based on platform. The hardware limits for specific platforms are specified as "IPv4/IPv6 routes (LPM entries in hardware)" in the following tables.

In the Extended Edge Switching architecture, Layer-2, Layer-3, and multicast packet forwarding and filtering operations take place on the controlling bridge. The controlling bridge switch and attached BPEs (V400 Virtual Port Extenders) constitute a single,

extended switch system. Therefore, the Extended Edge Switching system assumes the scale and limits from the specific controlling bridge model in use. For applicable limits, see the following tables for the controlling bridge you are using.

## Base License Limits

The following table shows supported limits for features in the Base License.

**Table 10: Supported Limits for the Base License**

Metric	Product	Limit
<b>AAA (local)</b> —maximum number of admin and local user accounts.	All platforms	16
<b>Access lists (meters)</b> —maximum number of meters.	4120	512 ingress 128 egress
	4220	2048 ingress 256 egress
	ExtremeSwitching 5320, 5420	6,144 ingress 512 egress
	Extreme Networks 7520, 7720	6,000 ingress 2,000 egress
	ExtremeSwitching 5520	2,048 ingress 512 egress
	ExtremeSwitching 5720-MW	6,144 ingress 3,072 egress
<b>Access lists (policies)</b> —suggested maximum number of lines in a single policy file.	ExtremeSwitching 5720-MXW	6,144 ingress 6,144 egress
	All platforms	300,000
<b>Access lists (policies)</b> —maximum number of rules in a single policy file in first stage (VFP).	ExtremeSwitching 5520, 5720	2,048 ingress only
	ExtremeSwitching 5320-48T/P, 5420, Extreme Networks 7520, 7720	1,024 ingress only
	4120, 4220, ExtremeSwitching 5320-16P, 5320-24T-4X-XT	512 ingress only

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Access lists (slices)</b> —number of ACL slices.	ExtremeSwitching 5720, Extreme Networks 7520, 7720	12 ingress 4 egress
	ExtremeSwitching 5320-48T/P, 5420, 5520	18 ingress 4 egress
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	8 ingress 4 egress
<b>Access lists (slices)</b> —number of ACL slices in first stage (VFP).	All platforms	4 ingress only
<b>ACL Per Port Meters</b> —number of meters supported per port.	All platforms	16
<b>ACL port ranges.</b>	All platforms	32
<b>Meters Packets-Per-Second Capable.</b>	All platforms	N/A
<b>AVB (audio video bridging)</b> —maximum number of active streams.	ExtremeSwitching 5320 (except extended temperature models), 5420	1,024
	ExtremeSwitching 5520, 5720	4,096
<b>BFD sessions (Software Mode)</b> —maximum number of BFD sessions.	All platforms except 4120 and 4220 (default timers—1 sec).	512
<b>BFD IPv4 sessions (Hardware Assisted)</b> —maximum number of IPv4 BFD sessions.	Extreme 7520, 7720	900 (PTP not enabled) 425 (PTP enabled) 256 (with 3 ms transmit interval)
<b>BFD IPv6 sessions (Hardware Assisted)</b> —maximum number of IPv6 BFD sessions.	Extreme 7520, 7720	425 (PTP not enabled)
<b>BGP (multicast address-family routes)</b> —maximum number of multicast address-family routes.	ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720	25,000
	ExtremeSwitching 5420, 5720-MW	20,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT)	8,000
	ExtremeSwitching 5320-24T-4X-XT. 5320-24T-24S-4XE-XT	2,000

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>BGP (non-unique routes)</b> — maximum number of nonunique BGP routes.	ExtremeSwitching 5420, 5520, 5720MXW, Extreme Networks 7520, 7720	75,000
	ExtremeSwitching 5720-MW	60,000
	ExtremeSwitching 5320 48T/P , 5320-24T-24S-4XE-XT	36,000
	ExtremeSwitching 5320 16P, 24T/P	24,000
	ExtremeSwitching 5320-24T-4X-XT	2,700
<b>BGP (peers)</b> —maximum number of BGP peers.	All platforms except 4120 and 4220.	2
<b>BGP (unicast address-family routes)</b> —maximum number of unicast address-family routes.	ExtremeSwitching 5420, 5520, 5720MXW, Extreme Networks 7520, 7720 (at default)	25,000
	ExtremeSwitching 5720-MW	20,000
	ExtremeSwitching 5320 48T/P , 5320-24T-24S-4XE-XT	12,000
	ExtremeSwitching 5320 16P, 24T/P	8,000
	ExtremeSwitching 5320-24T-4X-XT	900
	ExtremeSwitching 5720-MW (with ALPM enabled)	163,000
	ExtremeSwitching 5720-MXW (with ALPM enabled)	288,000
	ExtremeSwitching 5520 (with ALPM enabled)	80,000
<b>BGP auto-peering</b> —maximum number of auto-peering nodes and VTEPs.	All platforms except 4120 and 4220.	64
<b>BGP auto-peering attached IPv4 hosts</b> — maximum number of attached IPv4 hosts.	All platforms except 4120 and 4220.	64,000
<b>BGP auto-peering attached IPv6 hosts</b> — maximum number of attached IPv6 hosts.	All platforms except 4120 and 4220.	8,000
<b>BGP auto-peering ECMP</b> —maximum number of equal cost multipath for auto-peering.  <b>Note:</b> * Subject to the limitation imposed by the number of physical ports on a switch.	ExtremeSwitching 5720, Extreme Networks 7520, 7720	16*
	ExtremeSwitching 5320, 5420, 5520	4*

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>BGP auto-peering maximum IPv4 prefixes with ECMP</b> —Maximum number of IPv4 Network prefixes with ECMP.	ExtremeSwitching 5320, 5420, 5520, 5720	16,000
	Extreme Networks 7520, 7720	64,000
<b>BGP auto-peering maximum IPv6 prefixes with ECMP</b> —Maximum number of IPv6 Network prefixes with ECMP.	ExtremeSwitching 5320, 5420, 5520, 5720	254
	Extreme Networks 7520, 7720	64,000
<b>BGP auto-peering MLAG peers</b> —maximum MLAG peers per AutoBGP node.	All platforms except 4120 and 4220.	1
<b>BGP auto-peering VRFs</b> —maximum number of VRFs.	All platforms except 4120 and 4220.	64
<b>BGP auto-peering EVPN instances</b> —maximum EVPN instances.	All platforms except 4120 and 4220.	1,024
<b>BGPv6 (unicast address family routes)</b> —maximum number of unicast address family routes.	ExtremeSwitching 5320 48T/P, 5320-24T-24S-4XE-XT , 5420, 5520, 5720-MW	6,000
	ExtremeSwitching 5720-MW (with ALPM enabled)	107,000
	ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720	10,000
	ExtremeSwitching 5720-MXW (with ALPM enabled)	213,000
	ExtremeSwitching 5520 (with ALPM enabled)	40,000
	ExtremeSwitching 5320 16P, 24T/P	4,000
	ExtremeSwitching 5320-24T-4X-XT	400
<b>BGPv6 (non-unique routes)</b> — maximum number of nonunique BGP routes.	ExtremeSwitching 5420, 5520, 5720-MW	18,000
	ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720	30,000
	ExtremeSwitching 5320	14,000
	ExtremeSwitching 5320 16P, 24T/P	12,000
	ExtremeSwitching 5320-24T-4X-XT	1,200
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per virtual router.	All platforms	8

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per VLAN.	All platforms	8
<b>BOOTP/DHCP relay</b> —maximum number of DHCPv4/v6 relay agents	All platforms	4,000
<b>Connectivity fault management (CFM)</b> —maximum number of CFM domains.	All platforms	8
<b>CFM</b> —maximum number of CFM associations.	All platforms	256
<b>CFM</b> —maximum number of CFM up end points.	All platforms	32
<b>CFM</b> —maximum number of CFM down end points.	All platforms	32
<b>CFM</b> —maximum number of CFM remote end points per up/down end point.	All platforms	2,000
<b>CFM</b> —maximum number of dot1ag ports.	All platforms	128
<b>CFM</b> —maximum number of CFM segments.	All platforms	1,000
<b>CFM</b> —maximum number of MIPs.	All platforms	256
<b>CLEAR-Flow</b> —total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs.	4120, 4220, ExtremeSwitching 5320, 5420, 5720, Extreme Networks 7520, 7720	8,192
	ExtremeSwitching 5520	9,215
<b>Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)</b> —maximum number of DCBX application TLVs.	All platforms	8
<b>DHCPv6 Prefix Delegation Snooping</b> —Maximum number of DHCPv6 prefix delegation snooped entries.	All platforms	256 (with underlying protocol RIPng) 128 (with underlying protocol OSPFv3) 1,024 (with static routes)

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>DHCP snooping entries</b> —maximum number of DHCP snooping entries.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	2,050
	Extreme Networks 7520, 7720	2,048
<b>Dynamic ACLs</b> —maximum number of ACLs processed per second.  <b>Note:</b> Limits are load-dependent.	All platforms  with 50 DACLs with 500 DACLs	10 5
<b>EAPS domains</b> —maximum number of EAPS domains.  <b>Note:</b> An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.	Extreme Networks 7520, 7720	4
	ExtremeSwitching 5720	128
	ExtremeSwitching 5320-24T/P, 5320-16P	32
	ExtremeSwitching 5320-48T/P, 5420, 5520	64
<b>EAPSV1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching 5320-24T/P, 5320-16P	1,000
	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	2,000
<b>EAPSV2 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching 5320, 5420, 5520	500
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	2,000
<b>ELSM (vlan-ports)</b> —maximum number of VLAN ports.	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	4,000
	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	5,000
<b>ERPS domains</b> —maximum number of ERPS domains with or without CFM configured.	All platforms except 4120 and 4220.	32
<b>ERPSV1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching 5320-24T/P, 5320-16P	1,000
	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	2,000
<b>ERPSV2 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching 5320-24T/P, 5320-16P	500
	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	2,000
<b>ESRP groups</b> —maximum number of ESRP groups	All platforms except 4120 and 4220.	32
<b>ESRP domains</b> —maximum number of ESRP domains.	All platforms except 4120 and 4220.	64

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>ESRP L2 VLANs</b> —maximum number of ESRP VLANs without an IP address configured.	All platforms except 4120 and 4220.	1,000
<b>ESRP L3 VLANs</b> —maximum number of ESRP VLANs with an IP address configured.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	511
	ExtremeSwitching 5320-24T/P, 5320-16P	509
<b>ESRP (maximum ping tracks)</b> —maximum number of ping tracks per VLAN.	All platforms except 4120 and 4220.	8
<b>ESRP (IP route tracks)</b> —maximum IP route tracks per VLAN.	All platforms except 4120 and 4220.	8
<b>ESRP (VLAN tracks)</b> —maximum number of VLAN tracks per VLAN.	All platforms except 4120 and 4220.	1
<b>Extended Edge Switching maximum BPEs</b> —maximum number of attached bridge port extenders (BPEs).	ExtremeSwitching 5520, 7520-48Y	48
	ExtremeSwitching 5420	20
<b>Extended Edge Switching maximum cascade ports</b> —maximum number of upstream ports on bridge port extenders (BPEs).	ExtremeSwitching 5420, 5520, 7520-48Y	2 on V400-24 models 4 on V400-48 models
<b>Extended Edge Switching maximum tiers</b> —maximum number of cascade levels (tiers) of bridge port extenders (BPEs).	ExtremeSwitching 5420, 5520, 7520-48Y	4
<b>Extended Edge Switching maximum ring BPEs</b> —maximum number of bridge port extenders (BPEs) in a ring topology.	ExtremeSwitching 5420, 5520, 7520-48Y	8
<b>Extended Edge Switching maximum VLANs</b> —maximum number of VLANs - Includes all VLANs	ExtremeSwitching 5520, 7520-48Y	4,094
	ExtremeSwitching 5420	1,024



**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Extended Edge Switching VLAN+ port memberships</b> —maximum number of VLAN+ (extended) port memberships.	ExtremeSwitching 5520, 7520-48Y	12,000 in hash mode (default) 131,000 in port-group mode
	ExtremeSwitching 5420	8,750 in hash mode (default) 131,617 in port-group mode
<b>Forwarding rate</b> —maximum L3 software forwarding rate.	4220	9,274
	4120	12,624
	ExtremeSwitching 5320-48P	19,142 pps
	ExtremeSwitching 5420F-48T	21,585 pps
	ExtremeSwitching 5520-24T	18,838 pps
	ExtremeSwitching 5720-MW	27,000 pps
	ExtremeSwitching 5720-MXW Extreme Networks 7520, 7720	31,000 pps 34,813 pps
<b>FDB (unicast blackhole entries)</b> —maximum number of unicast blackhole FDB entries.	4120	16,384
	4220, ExtremeSwitching 5320	32,000
	ExtremeSwitching 5420M	65,536
	ExtremeSwitching 5420F	32,768 <sup>f</sup>
	ExtremeSwitching 5520	114,688 <sup>f</sup>
	ExtremeSwitching 5720-MW ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720	163,840 <sup>f</sup> 294,912 <sup>f</sup>
<b>FDB (multicast blackhole entries)</b> —maximum number of multicast blackhole FDB entries.	ExtremeSwitching 5520, 5720-MW, Extreme Networks 7520, 7720	4,096
	ExtremeSwitching 5420	1,024
	4120, 4220, ExtremeSwitching 5320	1,000
	ExtremeSwitching 5720-MXW	16,000
<b>FDB (maximum L2 entries)</b> —maximum number of MAC addresses.	4120	16,384
	4220, ExtremeSwitching 5320	32,000

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
	ExtremeSwitching 5420M	65,536
	ExtremeSwitching 5420F	32,768 <sup>9</sup>
	ExtremeSwitching 5520	114,688 <sup>9</sup>
	ExtremeSwitching 5720-MW	163,840 <sup>9</sup>
	ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720	294,912 <sup>9</sup>
<b>FDB (maximum L2 entries)</b> —maximum number of multicast FDB entries.	ExtremeSwitching 5520, Extreme Networks 7520, 7720	4,096
	4120, 4220, ExtremeSwitching 5320, 5420	1,024
	ExtremeSwitching 5720	16,000
<b>Identity management</b> —maximum number of Blacklist entries.	All platforms except 4120 and 4220.	512
<b>Identity management</b> —maximum number of Whitelist entries.	All platforms except 4120 and 4220.	512
<b>Identity management</b> —maximum number of roles that can be created.	All platforms except 4120 and 4220.	64
<b>Identity management</b> —maximum role hierarchy depth allowed.	All platforms except 4120 and 4220.	5
<b>Identity management</b> —maximum number of attribute value pairs in a role match criteria.	All platforms except 4120 and 4220.	16
<b>Identity management</b> —maximum number of child roles for a role.	All platforms except 4120 and 4220.	8
<b>Identity management</b> —maximum number of policies/dynamic ACLs that can be configured per role.	All platforms except 4120 and 4220.	8
<b>Identity management</b> —maximum number of LDAP servers that can be configured.	All platforms except 4120 and 4220.	8
<b>Identity management</b> —maximum number of Kerberos servers that can be configured.	All platforms except 4120 and 4220.	20
<b>Identity management</b> —maximum database memory size.	All platforms except 4120 and 4220.	512

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Identity management</b> —recommended number of identities per switch.  <b>Note:</b> Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	All platforms except 4120 and 4220.	100
<b>Identity management</b> —recommended number of ACL entries per identity.  <b>Note:</b> Number of ACLs per identity, based on system ACL limitation.	All platforms except 4120 and 4220.	20
<b>Identity management</b> —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file.	All platforms except 4120 and 4220.	500
<b>IGMP snooping per VLAN filters</b> —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720	1,500
	4220, ExtremeSwitching 5320-24T-4X-XT	500
	4120	48
<b>IGMPv1/v2 SSM-map entries</b> —maximum number of IGMPv1/v2 SSM mapping entries.	All platforms except 4120 and 4220.	6
<b>IGMPv1/v2 SSM-map entries</b> —maximum number of sources per group in IGMPv1/v2 SSM mapping entries.	All platforms except 4120 and 4220.	50
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per port. <sup>n</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, Extreme Networks 7520, 7720 ,ExtremeSwitching 5720,ExtremeSwitching 5520	4,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
	4120	250

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
IGMPv2 subscriber— maximum number of IGMPv2 subscribers per switch. <sup>n</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520	20,000
	ExtremeSwitching 5720-MW, Extreme Networks 7520, 7720	45,000
	ExtremeSwitching 5720-MXW	54,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
	4120	256
IGMPv3 maximum source per group—maximum number of source addresses per group.	All platforms	250
IGMPv3 subscriber— maximum number of IGMPv3 subscribers per port. <sup>n</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720	4,000 1,000 250
	4220, ExtremeSwitching 5320-24T-4X-XT	
	4120	
IGMPv3 subscriber— maximum number of IGMPv3 subscribers per switch. <sup>n</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520	20,000
	ExtremeSwitching 5720-MW, Extreme Networks 7520, 7720	45,000
	ExtremeSwitching 5720-MXW	54,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
	4120	256
IP ARP entries in software— maximum number of IP ARP entries in software.  <b>Note:</b> Might be limited by hardware capacity of FDB (maximum L2 entries).	4120	400
	4220	4,000
	ExtremeSwitching 5420F models	12,000
	ExtremeSwitching 5420M models	24,000
	ExtremeSwitching 5320, 5520	74,750 <sup>h</sup>
	ExtremeSwitching 5720-MW	100,000
	Extreme Networks 7520, 7720	184,318 (up to)
	ExtremeSwitching 5720-MXW	221,000

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
IPv4 ARP entries in hardware with minimum LPM routes—maximum recommended number of IPv4 ARP entries in hardware, with minimum LPM routes present. Assumes number of IP route reserved entries is 100 or less.	4120	397
	4220	4,000
	ExtremeSwitching 5320	12,000
	ExtremeSwitching 5420M models	24,000
	ExtremeSwitching 5420F models	12,000
	ExtremeSwitching 5520	60,000 <sup>h</sup>
	ExtremeSwitching 5720-MW	80,000 <sup>h</sup>
	Extreme Networks 7520, 7720	146,000 <sup>h</sup>
	ExtremeSwitching 5720-MXW	172,000 <sup>h</sup>
IPv4 ARP entries in hardware with maximum LPM routes—maximum recommended number of IPv4 ARP entries in hardware, with maximum LPM routes present. Assumes number of IP route reserved entries is “maximum.”	4120	384
	4220	3,000
	ExtremeSwitching 5320	10,000
	ExtremeSwitching 5420M models	21,000
	ExtremeSwitching 5420F models	10,000
	ExtremeSwitching 5520	49,000 <sup>h</sup>
	ExtremeSwitching 5720-MW	70,000 <sup>h</sup>
	Extreme Networks 7520, 7720	125,000 <sup>h</sup>
	ExtremeSwitching 5720-MXW	156,000 <sup>h</sup>
IP flow information export (IPFIX)—number of simultaneous flows.	4120, 4220, ExtremeSwitching 5320	N/A
	ExtremeSwitching 5420	4,000 (IPv4 and IPv6 flows)
	ExtremeSwitching 5520	32,000 (IPv4 flows) 18,000 (IPv6 flows)
	ExtremeSwitching 5720	257,000 (IPv4 flows) 112,000 (IPv6 flows)

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
IPv4 remote hosts in hardware with zero LPM routes—maximum recommended number of IPv4 remote hosts (hosts reachable through a gateway) in hardware when LPM routing is not used. Assumes number of IP route reserved entries is 0, and number of IPv4 ARP entries present is 100 or less.	4120	450
	4220	4,000
	ExtremeSwitching 5320	20,000
	ExtremeSwitching 5320-24T/P, 5320-16P	24,000
	ExtremeSwitching 5420M	36,000
	ExtremeSwitching 5420F	24,000 <sup>h</sup>
	ExtremeSwitching 5520	102,000 <sup>h</sup>
	ExtremeSwitching 5720-MW	139,000 <sup>h</sup>
	Extreme Networks 7520, 7720	241,000 (up to) <sup>h</sup>
	ExtremeSwitching 5720-MXW (with ALPM enabled)	245,000 <sup>h</sup>
IPv4 routes—maximum number of IPv4 routes in software (combination of unicast and multicast routes), including static and from all routing protocols.	ExtremeSwitching 5520	81,000
	4120, 4220, ExtremeSwitching 5320, 5420	25,000
	ExtremeSwitching 5720-MW	163,000
	ExtremeSwitching 5720-MXW	288,000
	Extreme Networks 7520, 7720	350,000
IPv4 routes (LPM entries in hardware)— number of IPv4 routes in hardware.	4120	64
	4220	992
	ExtremeSwitching 5320-16T/P, 5320-24T/P	8,000
	ExtremeSwitching 5320-48T/P, 5420	12,000
	ExtremeSwitching 5520	81,000 <sup>q</sup>
	ExtremeSwitching 5720-MW	163,000 <sup>q</sup>
	Extreme Networks 7520, 7720	262,000 up to 350,000 <sup>q</sup>
	ExtremeSwitching 5720-MXW	288,000 <sup>q</sup>
IPv6 6in4 tunnel—maximum number of IPv6 6in4 tunnels.	All platforms except 4120 and 4220	255

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>IPv6 6to4 tunnel</b> —maximum number of IPv6 6to4 tunnels.	All platforms except 4120 and 4220	1 (per virtual router)
<b>IPv6 addresses on an interface</b> —maximum number of IPv6 addresses on an interface.	All platforms	255
<b>IPv6 addresses on a switch</b> —maximum number of IPv6 addresses on a switch.	All platforms	2,048
<b>IPv6 host entries in hardware</b> —maximum number of IPv6 neighbor entries in hardware.	4120	200
	4220	2,000
	ExtremeSwitching 5320	6,000
	ExtremeSwitching 5420M models	12,000
	ExtremeSwitching 5420F models	6,000
	ExtremeSwitching 5520	18,000 <sup>s</sup>
	ExtremeSwitching 5720-MW	24,000 <sup>s</sup>
	Extreme Networks 7520, 7720	57,000 <sup>h</sup>
<b>IPv6 routes in software</b> —maximum number of IPv6 routes in software, including static routes and routes from all routing protocols.	ExtremeSwitching 5520	18,000 <sup>q</sup>
	4120, 4220, ExtremeSwitching 5320, 5420	25,000
	ExtremeSwitching 5720-MW	07,000 <sup>q</sup>
	Extreme Networks 7520, 7720	1196,000 <sup>q</sup>
	ExtremeSwitching 5720-MXW	213,000 <sup>q</sup>
<b>IPv6 routes (LPM entries in hardware)</b> —maximum number of IPv6 routes in hardware.	4120	32
	4220	512
	ExtremeSwitching 5520	40,000 <sup>q</sup>
	ExtremeSwitching 5420	6,000
	ExtremeSwitching 5720-MW	107,000 <sup>q</sup>
	Extreme Networks 7520, 7720	131,000 up to 196,000 <sup>q</sup>
<b>IPv6 routes with a mask greater than 64 bits in hardware</b> —maximum number of such IPv6 LPM routes in hardware.	ExtremeSwitching 5320, 5420	256
	ExtremeSwitching 5520	8,192 <sup>r</sup>
	Extreme Networks 7520, 7720	32,000 <sup>r</sup>
	ExtremeSwitching 5720-MW	16,000 <sup>r</sup>
	ExtremeSwitching 5720-MXW	24,000 <sup>r</sup>

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>IPv6 route sharing in hardware</b> —route mask lengths for which ECMP is supported in hardware.	4120, 4220, ExtremeSwitching 5320, 5420	0–64, >64 single path only
	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	0–128 <sup>r</sup>
<b>IP router interfaces</b> —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	4120	126
	ExtremeSwitching 5320-48T/P, 5420	1,533
	4220, ExtremeSwitching 5320-24T/P, 5320-16P	509
	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	2,048
<b>IP multicast static routes</b> —maximum number of permanent multicast IP routes.	All platforms	1,024
<b>IP unicast static routes</b> —maximum number of permanent IP unicast routes.	All platforms	1,024
<b>IP route sharing (maximum gateways)</b> —Configurable maximum number of gateways used by equal cost multipath OSPF, BGP, IS-IS, static routes, or L2VPNs. Static routes, OSPF, and BGP are limited to 64 ECMP gateways per destination, while IS-IS is limited to 8. L2VPNs are limited to 16 LSPs per pseudowire on platforms that support 32 gateways, and 64 LSPs per pseudowire on platforms that support 64 gateways.	4120, 4220, ExtremeSwitching 5320, 5420, 5520	2, 4, or 8
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	2, 4, 8, 16, 32, or 64



**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
IP route sharing (total combinations of gateway sets)—maximum number of combinations of sets of adjacent gateways used by multipath OSPF, BGP, IS-IS, or static routes.	4120	62 (if maximum gateways is 2, 4, or 8)
	4220, ExtremeSwitching 5320  <b>Note:</b> The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see <a href="#">Switch Engine 32.7.1 User Guide</a> .	124 (if maximum gateways is 2) 124 (if maximum gateways is 4) 60 (if maximum gateways is 8)
	ExtremeSwitching 5420  <b>Note:</b> The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see <a href="#">Switch Engine 32.7.1 User Guide</a> .	510 (if maximum gateways is 2) 254 (if maximum gateway is 4) 126 (if maximum gateways is 8)
	ExtremeSwitching 5520  <b>Note:</b> The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see <a href="#">Switch Engine 32.7.1 User Guide</a> .	2,046 (if maximum gateways is 2) 1,022 (if maximum gateway is 4) 510 (if maximum gateways is 8)
	ExtremeSwitching 5720  if maximum gateways is 2 if maximum gateways is 4 if maximum gateways is 8 if maximum gateways is 16 (default) if maximum gateways is 32 if maximum gateways is 64	2,046 2,046 2,046 1,022 510 254

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
	<p><b>Note:</b> The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see <a href="#">Switch Engine 32.7.1 User Guide</a>.</p> <p>Extreme Networks 7520, 7720</p> <ul style="list-style-type: none"> <li>if maximum gateways is 2</li> <li>if maximum gateways is 4</li> <li>if maximum gateways is 8</li> <li>if maximum gateways is 16 (default)</li> <li>if maximum gateways is 32</li> <li>if maximum gateways is 64</li> </ul> <p><b>Note:</b> The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see <a href="#">Switch Engine 32.7.1 User Guide</a>.</p>	<p>4,094</p> <p>4,094</p> <p>2,046</p> <p>1,022</p> <p>510</p> <p>254</p>
<p><b>IP multinetting (secondary IP addresses)</b>—maximum number of secondary IP addresses per VLAN.</p>	<p>All platforms</p>	<p>255</p>
<p><b>Jumbo frames</b>—maximum size supported for jumbo frames, including the CRC.</p>	<p>All platforms</p>	<p>9,216</p>

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<p><b>Layer-2 IPMC forwarding caches</b>—(IGMP/MLD/PIM snooping) in mac-vlan mode.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>The internal lookup table configuration used is "I2-and-I3".</li> <li>IPv6 and IPv4 L2 IPMC scaling is the same for this mode.</li> <li>Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same.</li> </ul> <p>4120 and 4220 do not support PIM snooping.</p>	4120	16,000
	4220, ExtremeSwitching 5320	32,000
	ExtremeSwitching 5420	64,000
	ExtremeSwitching 5520	32,768
	ExtremeSwitching 5720-MW	49,152
	Extreme Networks 7520, 7720 ExtremeSwitching 5720-MXW	73,000 81,920
<p><b>Layer-3 IPv4 Multicast</b>—maximum number of &lt;S,G,V&gt; entries installed in the hardware (IP multicast compression enabled).</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Limit value is the same for MVR senders, PIM Snooping entries, PIM SSM cache, IGMP senders, PIM cache.</li> <li>Assumes source-group-vlan mode as look up key.</li> <li>Layer 3 IPMC cache limit in mixed mode also has the same value.</li> </ul>	4120	256
	4220	2,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT)	8,000

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
	ExtremeSwitching 5420M	12,000
	ExtremeSwitching 5420F	6,000
	ExtremeSwitching 5520	43,000
	ExtremeSwitching 5720-MW	61,000
	Extreme Networks 7520, 7720	104,000
	ExtremeSwitching 5720-MXW	110,000
	ExtremeSwitching 5320-24T-4X-XT	2000
<b>Layer-3 IPv6 Multicast</b> —maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).  <b>Note:</b> <ul style="list-style-type: none"> <li>Limit value is the same for MLD sender per switch, PIM IPv6 cache.</li> <li>Assumes source-group-vlan mode as lookup key.</li> </ul>	4120	128
	4220	1,000
4120 and 4220 do not support PIM snooping, but MLD cache is supported in the hardware.	ExtremeSwitching 5320 (except 5320-24T-4X-XT)	4,000
	ExtremeSwitching 5420M	6,000
	ExtremeSwitching 5420F	3,000
	ExtremeSwitching 5520	21,500
	ExtremeSwitching 5720-MW	30,500
	Extreme Networks 7520, 7720	52,000
	ExtremeSwitching 5720-MXW	55,000
	ExtremeSwitching 5320-24T-4X-XT	1,000
<b>Load sharing</b> —maximum number of load sharing groups.  <b>Note:</b> The actual number of load-sharing groups that can be configured is limited by the number of physical ports present in the switch or SummitStack.	All platforms	128

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Load sharing</b> —maximum number of ports per load-sharing group.	For standalone and stacked: 4120, 4220, ExtremeSwitching 5320, 5420	8
	For standalone: ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	32
	For stacked: ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	64
<b>Logged messages</b> —maximum number of messages logged locally on the system.	All platforms	20,000
<b>MAC-based security</b> —maximum number of MAC-based security policies.	All platforms	1,024
<b>MAC Locking</b> —Maximum number of MAC locking stations that can be learned on a port.	All platforms	64 (static MAC locking stations) 600 (first arrival MAC locking stations)
<b>Meters</b> —maximum number of meters supported.	All platforms	2,048
<b>Maximum mirroring instances.</b>	All platforms except 4120.	4 total, 2 egress
	4120	6 defined, max 4 enabled (max 1 egress)
<b>Mirroring (filters)</b> —maximum number of mirroring filters.  <b>Note:</b> This is the number of filters across all the active mirroring instances.	All platforms	128
<b>Mirroring, one-to-many (filters)</b> —maximum number of one-to-many mirroring filters.  <b>Note:</b> This is the number of filters across all the active mirroring instances.	All platforms	128

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Mirroring, one-to-many (monitor port)</b> —maximum number of one-to-many monitor ports.	All platforms	16
<b>MLAG ports</b> —maximum number of MLAG ports allowed.  <b>Note:</b> The number of MLAG ports that can be configured is limited by the number of physical ports present in the system.	ExtremeSwitching 5320	55
	ExtremeSwitching 5720	63
	ExtremeSwitching 5420, 5520	59
	Extreme Networks 7520, 7720	61
	Stacking <b>Note:</b> Maximum user ports	1
<b>MLAG peers</b> —maximum number of MLAG peers allowed.	All platforms	2
<b>Multicast listener discovery (MLD) snooping per-VLAN filters</b> —maximum number of VLANs supported in per-VLAN MLD snooping mode.	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720	1,500
	4220, ExtremeSwitching 5320-24T-4X-XT	250
	4120	32
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per port. <sup>¶</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720	4,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
	4120	128
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per switch. <sup>¶</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520	10,000
	ExtremeSwitching 5720-MW	30,000
	Extreme Networks 7520, 7720	45,000
	ExtremeSwitching 5720-MXW	54,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
	4120	256

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Multicast listener discovery (MLD)v2 subscribers</b> —maximum number of MLDv2 subscribers per port. <sup>n</sup>	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720	4,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
	4120	128
<b>Multicast listener discovery (MLD)v2 subscribers</b> —maximum number of MLDv2 subscribers per switch. <sup>n</sup>	4120, 4220, ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520	10,000
	ExtremeSwitching 5720-MW	30,000
	Extreme Networks 7520, 7720	45,000
	ExtremeSwitching 5720-MXW	54,000
	4220, ExtremeSwitching 5320-24T-4X-XT	1,000
4120	256	
<b>Multicast listener discovery (MLD)v2 maximum source per group</b> —maximum number of source addresses per group.	All platforms	200
<b>Multicast listener discovery (MLD) SSM-map entries</b> —maximum number of MLD SSM mapping entries.	All platforms except 4120 and 4220.	500
<b>Multicast listener discovery (MLD) SSM-MAP entries</b> —maximum number of sources per group in MLD SSM mapping entries.	All platforms except 4120 and 4220.	50
<b>Network Address Translation (NAT) VLANs</b> —maximum number of NAT VLANs.	Extreme 7520, 7720	4
<b>Network Address Translation (NAT) Sessions</b> —number of NAT sessions supported (non twice-NAT).	Extreme 7520, 7720	1,023
<b>Network Login</b> —maximum number of clients being authenticated on MAC-based VLAN enabled ports.	All platforms	1,024
<b>Network Login</b> —maximum number of dynamic VLANs.	All platforms	1,024

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Network Login VLAN VSAs</b> —maximum number of VLANs a client can be authenticated on at any given time.	All platforms	10
<b>Network Service Identifiers (NSI)/VLAN mappings</b> —maximum number of VLANs to NSI mappings.	All platforms	94
<b>Node Alias</b> —maximum number of entries per slot.	All platforms	8,192
<b>ONEPolicy Dynamic ACL Rules</b> —maximum number of Dynamic ACLs supported via RADIUS VSA 232 per user in Access-List mode.	All platforms	64
<b>ONEPolicy Roles/Profiles</b> —maximum number of policy roles/profiles.	All platforms	63



**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
ONEPolicy Rules per Role/ Profile—maximum number of rules per role/policy.	ExtremeSwitching 5320-24T-4X-XT	IPv4 Rules: 256 IPv6 Rules: 0 MAC Rules: 0 L2 Rules: 184
	4120	IPv4:128 L2:56
	4220	IPv4:256 L2:184
	ExtremeSwitching 5320	IPv4 Rules: 1,024 IPv6 Rules: 0 MAC Rules: 0 L2 Rules: 952
	ExtremeSwitching 5420-F, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720	IPv4 Rules: 512 IPv6 Rules: 512 MAC Rules: 512 L2 Rules: 440
	ExtremeSwitching 5720-MW	IPv4 Rules: 1,536 IPv6 Rules: 1,536 MAC Rules: 1,536 L2 Rules: 1,464
	ExtremeSwitching 5720-MXW	IPv4 Rules: 2,048 IPv6 Rules: 2,048 MAC Rules: 2,048 L2 Rules: 1 ,976
	ExtremeSwitching 5420-M, 5520	IPv4 Rules: 1,024

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
		IPv6 Rules: 1,024 MAC Rules: 1,024 L2 Rules: 952
<b>ONEPolicy Authenticated Users per Switch</b> —maximum number of authenticated users per switch only with TCI-Overwrite enabled.	ExtremeSwitching 5520, 5720	1,024
	ExtremeSwitching 5320-24T-4X-XT	128
	ExtremeSwitching 5320, 5420, Extreme Networks 7520, 7720	512
	4120, 4220, Stacking	256 Depends on the stack nodes, but the maximum is 1,024.
<b>ONEPolicy Authenticated Users per Switch</b> —maximum number of authenticated users per switch with TCI-Overwrite disabled.  <b>Note:</b> The maximum values assume 75% utilization of VLAN-XLATE hash table.	Stacking	1,536–65,534
	Extreme Networks 7520, 7720	24,576
	ExtremeSwitching 5320-24T-4X-XT	384
	4120, 4220, ExtremeSwitching 5320, 5420	768
	ExtremeSwitching 5720	12,288
	ExtremeSwitching 5520	9,216
<b>ONEPolicy Authenticated Users per Port per Switch</b> — maximum number of authenticated users per port per switch with TCI overwrite disabled.  <b>Note:</b> The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching 5320-24T-4X-XT	384
	4120, 4220, ExtremeSwitching 5320, 5420	768
	Extreme Networks 7520, 7720	24,576
	ExtremeSwitching 5720	12,288
	ExtremeSwitching 5520	9,216

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>ONEPolicy Authenticated Users per Port per Switch</b> — maximum number of authenticated users per port with only with TCI-Overwrite enabled.	4120	184
	4220	440
	ExtremeSwitching 5320, 5420, Extreme Networks 7520, 7720	512
	ExtremeSwitching 5520, 5720	1,024
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —total maximum number of unique permit/deny traffic classification rules types (system/stack).	ExtremeSwitching 5320, 5420-F, Extreme Networks 7520, 7720	1,976
	ExtremeSwitching 5720-MW	6,072
	ExtremeSwitching 5720-MXW	8,120
	ExtremeSwitching 5420-M, 5520	4,024
	ExtremeSwitching 5320-24T-24S-4XE-XT	512
	4220	440
	4120	164
ExtremeSwitching 5320-24T-4X-XT	128	
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest).	ExtremeSwitching 5420-M, 5520	1,024
	ExtremeSwitching 5420-F, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720	512
	ExtremeSwitching 5720-MW	1,536
	ExtremeSwitching 5720-MXW	2,048
	4120, 4220, ExtremeSwitching 5320	N/A
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest).	ExtremeSwitching 5420-M. 5520	1,024
	ExtremeSwitching 5420-F, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720	512
	ExtremeSwitching 5720-MW	1,536
	ExtremeSwitching 5720-MXW	2,048
	4120, 4220, ExtremeSwitching 5320	N/A
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype).	ExtremeSwitching 5320-24T-4X-XT	256
	ExtremeSwitching 5320, 5420-F, 5520	1,024
	ExtremeSwitching 5720-MW	1,536
	ExtremeSwitching 5720-MXW	2,048
	ExtremeSwitching 5420-M, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720	512
	4220	256
4120	128	

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port).	ExtremeSwitching 5320-24T-24S-4XE-XT	440
	ExtremeSwitching 5320, 5420-M, 5520	952
	ExtremeSwitching 5720-MW	1,464
	ExtremeSwitching 5720-MXW	1,976
	ExtremeSwitching 5420-F, Extreme Networks 7520, 7720	440
	4220, ExtremeSwitching 5320-24T-4X-XT 4120	184 56
<b>OnePolicy Maximum number of rules supported in AccessList mode</b> —maximum number of rules in AccessList mode.	Extreme Networks 7520, 7720 4120	3,512 440
	4220, ExtremeSwitching 5320-24T-4X-XT	952
	ExtremeSwitching 5320, 5420-F, 5320-24T-24S-4XE-XT	4,024
	ExtremeSwitching 5420-M	8,120
	ExtremeSwitching 5720-MW	12,216
	ExtremeSwitching 5720-MXW	16,312
<b>OSPFv2/v3 ECMP</b> —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching 5320, 5420, 5520, 5720	8
	Extreme Networks 7520, 7720	64
<b>OSPFv2 areas</b> —as an ABR, how many OSPF areas are supported within the same switch.	All platforms except 4120 and 4220.	8
<b>OSPFv2 external routes</b> —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching 5520	5,000
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	10,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420	4,000
	ExtremeSwitching 5320-24T-4X-XT	500
<b>OSPFv2 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720	2,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420	1,600
	ExtremeSwitching 5320-24T-4X-XT	500
<b>OSPFv2 inter-vr or leaking routes</b> —recommended maximum number of inter-vr routes contained in an OSPF LSDB.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	2,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT)	1,600
	ExtremeSwitching 5320-24T-4X-XT	500

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>OSPFv2 interfaces</b> —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	All platforms except 4120 and 4220.	4
<b>OSPFv2 links</b> —maximum number of links in the router LSA.	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	400
	ExtremeSwitching 5320, 5420	320
<b>OSPFv2 neighbors</b> —maximum number of supported OSPF adjacencies.	All platforms except 4120 and 4220.	4
<b>OSPFv2 routers in a single area</b> —recommended maximum number of routers in a single OSPF area.	ExtremeSwitching 5520	50
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	100
	ExtremeSwitching 5320, 5420	40
<b>OSPFv2 virtual links</b> —maximum number of supported OSPF virtual links.	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	32
	ExtremeSwitching 5320, 5420	25
<b>OSPFv3 areas</b> —as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching 5520	16
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	100
	ExtremeSwitching 5320, 5420	12
<b>OSPFv3 external routes</b> —recommended maximum number of external routes.	ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720	10,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720-MW	7,500
	ExtremeSwitching 5420	6,000
	ExtremeSwitching 5320-24T-4X-XT	300
<b>OSPFv3 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes.	ExtremeSwitching 5520	3,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720, Extreme Networks 7520, 7720	4,000
	ExtremeSwitching 5420	6,000
	ExtremeSwitching 5320-24T-4X-XT	300
<b>OSPFv3 interfaces</b> —maximum number of OSPFv3 interfaces (active interfaces only).	All platforms except 4120 and 4220.	4
<b>OSPFv3 neighbors</b> —maximum number of OSPFv3 neighbors.	All platforms except 4120 and 4220.	4

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>OSPFv3 virtual links</b> —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	16
	ExtremeSwitching 5320, 5420	12
<b>PIM IPv4 (maximum interfaces)</b> —maximum number of PIM active interfaces.	All platforms except 4120 and 4220.	N/A
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	All platforms except 4120 and 4220.	180
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per static rendezvous point.	All platforms except 4120 and 4220.	180
<b>PIM IPv4 Limits</b> —maximum number of multicast sources per group.	All platforms except 4120, 4220, ExtremeSwitching 5320 24T XT, 5520, 5720-MXW, Extreme Networks 7520, and 7720. ExtremeSwitching 5320 24T XT	5,000 2,000
<b>PIM IPv4 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	All platforms except 4120 and 4220.	145
<b>PIM IPv4 Limits</b> —static rendezvous points.	All platforms except 4120 and 4220.	32
<b>PIM IPv6 (maximum interfaces)</b> —maximum number of PIM active interfaces.	All platforms except 4120 and 4220.	N/A
<b>PIM IPv6 Limits</b> —maximum number of multicast sources per group.	All platforms except 4120, 4220 ExtremeSwitching 5320 24T XT, 5520, 5720-MXW, Extreme Networks 7520, and 7720. ExtremeSwitching 5320 24T XT	1,750 1,000
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	All platforms except 4120 and 4220.	70
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per static rendezvous point.	All platforms except 4120 and 4220.	3,000 (depends on policy file limits)
<b>PIM IPv6 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	All platforms except 4120 and 4220.	64

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>PIM IPv6 Limits</b> —maximum number of secondary addresses per interface.	All platforms except 4120 and 4220.	70
<b>PIM IPv6 Limits</b> —static rendezvous points.	All platforms except 4120 and 4220.	32
<b>Policy-based routing (PBR) redundancy</b> —maximum number of flow-redirects.	All platforms	256 <sup>o</sup>
<b>Policy-based routing (PBR) redundancy</b> —maximum number of next hops per each flow-direct.	All platforms	32 <sup>o</sup>
<b>Port-specific VLAN tags</b> —maximum number of port-specific VLAN tags.	ExtremeSwitching 5320, 5420	N/A
	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	1,023
<b>Port-specific VLAN tags</b> —maximum number of port-specific VLAN tag ports.	ExtremeSwitching 5320, 5420	N/A
	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	4,000
<b>Private VLANs</b> —maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	36
	Extreme Networks 7520, 7720	71
<b>Private VLANs</b> —maximum number of private VLANs with an IP address on the network VLAN.  <b>Note:</b> This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	960
	Extreme Networks 7520, 7720	1,024
<b>Private VLANs</b> —maximum number of private VLANs in an L2-only environment.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	960
	Extreme Networks 7520, 7720	1,280
<b>Route policies</b> —suggested maximum number of lines in a route policy file.	All platforms	10,000

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>RIP Learned Routes</b> —maximum number of RIP routes supported without aggregation.	ExrtemeSwitching 5320 48T/P, 5320 24T-24S XT, 5420, 5520, 5720, Extreme Networks 7520, 7720	10,000
	ExrtemeSwitching 5320 16P, 5320 24T/P	7000
	ExrtemeSwitching 5320-24T-4X-XT	900
<b>RIP interfaces on a single router</b> —recommended maximum number of RIP routed interfaces on a switch.	ExtremeSwitching 5320, 5420, 5520, 5720, Extreme Networks 7520, 7720	256
<b>RIPng learned routes</b> —maximum number of RIPng routes.	ExrtemeSwitching 5320 48T/P, 5320 24T-24S XT, 5420, 5520, 5720, Extreme Networks 7520, 7720	3,000
	ExrtemeSwitching 5320 16P, 5320 24T/P	2,000
	ExrtemeSwitching 5320-24T-4X-XT	400
<b>Spanning Tree (maximum STPDs)</b> —maximum number of Spanning Tree Domains on port mode EMISTP.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, 5320-24T-24S-4XE-XT, Extreme Networks 7520, 7720	64
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT	32
<b>Spanning Tree PVST+</b> —maximum number of port mode PVST domains.  <b>Note:</b> For all platforms, the maximum number of active ports per PVST domain depends on the maximum number of spanning tree ports supported on given platform. For example, for an ExtremeSwitching switch that supports 256 PVST domains (maximum) and 4,096 STP ports (maximum), the maximum number of active ports per PVST domain would be 16 ports (4,096 ÷ 256).	4120, 4220, ExtremeSwitching 5320, 5320-24T-4X-XT, 5320-24T-24S-4XE-XT, 5420, 5520, 5720	128
	Extreme Networks 7520, 7720	384
<b>Spanning Tree</b> —maximum number of multiple spanning tree instances (MSTI) domains.	ExtremeSwitching 5320-48T/P, 5320-24T-24S-4XE-XT, 5420, 5520, 5720, Extreme Networks 7520, 7720	64
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT	32



**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Spanning Tree</b> —maximum number of VLANs per MSTI.  <b>Note:</b> Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	600
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P; 5320-24T-4X-XT, 5320-24T-24S-4XE-XT	256
<b>Spanning Tree</b> —maximum number of VLANs on all MSTP instances.	ExtremeSwitching 5320-48T/P, 5320-24T-24S-4XE-XT, 5420, 5520, 5720, Extreme Networks 7520, 7720	1,024
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT	512
<b>Spanning Tree (802.1d domains)</b> —maximum number of 802.1d domains per port.	All platforms	1
<b>Spanning Tree (number of ports)</b> —maximum number of ports including all Spanning Tree domains.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	4,096
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	2,048
<b>Spanning Tree (maximum VLANs)</b> —maximum number of STP-protected VLANs (dot1d and dot1w).	ExtremeSwitching 5320-48T/P, 5320-24T-24S-4XE-XT, 5420, 5520, 5720, Extreme Networks 7520, 7720	1,024
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT	600
<b>SSH (number of sessions)</b> —maximum number of simultaneous SSH sessions.	All platforms	8
<b>Static MAC multicast FDB entries</b> —maximum number of permanent multicast MAC entries configured into the FDB.	All platforms	1,024
<b>Syslog servers</b> —maximum number of simultaneous Syslog servers that are supported.	All platforms	16
<b>Syslog targets</b> —maximum number of configurable Syslog targets.	All platforms	16
<b>Telnet (number of sessions)</b> —maximum number of simultaneous Telnet sessions.	All platforms	8

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>Virtual routers</b> —maximum number of user-created virtual routers that can be created on a switch.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	63
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	16 (local-only VRs)
<b>Virtual router forwarding (VRFs)</b> —maximum number of VRFs that can be created on a switch.  <b>Note:</b> * Subject to other system limitations.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	960 *
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	16 (local-only VRs)
<b>Virtual router protocols per VR</b> —maximum number of routing protocols per VR.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	8
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	N/A
<b>Virtual router protocols per switch</b> —maximum number of VR protocols per switch.	ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720	64
	4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P	N/A
<b>VLAN aggregation</b> —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs.	All platforms	1,000
<b>VLANs</b> —includes all VLANs.  <b>Note:</b> Only 4,092 user-configurable VLANs are supported. (VLAN 1 is the default VLAN, and 4,095 is the management VLAN, and you may not configure them.)	All platforms	4,094
<b>VLANs (Layer 2)</b> —maximum number of Layer 2 VLANs.	All platforms	4,094
<b>VLANs (Layer 3)</b> —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching 5320-48T/P, 5420	1,533
	4120	126
	4220, ExtremeSwitching 5320-24T/P, 5320-16P	509
	ExtremeSwitching 5520, 5720, Extreme 7520, 7720	2,048

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>VLAN Port Interfaces (VPIF)</b> —maximum number of VLAN port interfaces.	ExtremeSwitching 5320	40,000
	ExtremeSwitching 5420	60,000
	4120, 4220	65,549
	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	131,585
<b>VLANs (maximum active port-based)</b> —maximum active ports per VLAN when 4,094 VLANs are configured with the default license.	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	32
	4120, 4220	15
	ExtremeSwitching 5320, 5420	3
<b>VLANs (maximum active protocol-sensitive filters)</b> —number of simultaneously active protocol filters in the switch.	All platforms except 4120 and 4220.	16
<b>VLAN translation</b> —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	36
	Extreme Networks 7520, 7720	71
<b>VLAN translation</b> —maximum number of translation VLAN pairs with an IP address on the translation VLAN.  <b>Note:</b> This limit is dependent on the maximum number of translation VLAN pairs in an L2-only environment if the configuration includes tagged and translated ports.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	960
	Extreme Networks 7520, 7720	1,024
<b>VLAN translation</b> —maximum number of translation VLAN pairs in an L2-only environment.	4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720	960
	Extreme Networks 7520, 7720	2,046
<b>VMAN CEP</b> —maximum number of CVIDs.  <b>Note:</b> With 75% hash table utilization.	ExtremeSwitching 5320, 5420	768
	ExtremeSwitching 5520, 5720	9,000
<b>VRRP (v2/v3-IPv4) (maximum instances)</b> —maximum number of VRRP instances for a single switch.	<b>Normal Mode (as individual VRs):</b>	

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<p><b>Note:</b> These limits are applicable for Fabric Routing configuration also.</p> <p><b>Note:</b> Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type.</p>	<p>All platforms except 4120 and 4220.</p> <p><b>Scaled Mode (with groups):</b></p> <p>ExtremeSwitching 5720, Extreme Networks 7520, 7720</p> <p>ExtremeSwitching 5320, 5420, 5520</p> <p><b>Sliced Mode:</b></p> <p>All platforms except 4120 and 4220.</p>	<p>511</p> <p>2,048</p> <p>1,000</p> <p>511</p>
<p><b>VRRP (v3-IPv6) (maximum instances)</b>—maximum number of VRRP instances for a single switch. (VRRP-VRRPv3-IPv6)</p> <p><b>Note:</b> These limits are applicable for Fabric Routing configuration also.</p> <p><b>Note:</b> Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type.</p>	<p><b>Normal Mode (as individual VRs):</b></p> <p>All platforms except 4120 and 4220.</p> <p><b>Scaled Mode (with groups):</b></p> <p>ExtremeSwitching 5720, Extreme Networks 7520, 7720</p> <p>ExtremeSwitching 5320, 5420, 5520</p>	<p>511</p> <p>2,048</p> <p>1,000</p>
<p><b>VRRP (v2/v3-IPv4/IPv6) (maximum VRID)</b>—maximum number of unique VRID numbers per switch.</p>	<p>All platforms except 4120 and 4220.</p>	<p>255</p>
<p><b>VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN)</b>—maximum number of VRIDs per VLAN.</p>	<p>All platforms except 4120 and 4220.</p>	<p>255</p>
<p><b>VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks)</b>—maximum number of ping tracks per VLAN.</p>	<p>All platforms except 4120 and 4220.</p>	<p>8</p>
<p><b>VRRP (maximum ping tracks)</b>—maximum number of ping tracks per VRRP Instance under 128 VRRP instances.</p>	<p>All platforms except 4120 and 4220.</p>	<p>8 (20 centisecond or 1 second hello interval)</p>

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>VRRP (v3-IPv6) (maximum ping tracks)</b> —maximum number of ping tracks per VRRP Instance under 128 VRRP instances.	All platforms except 4120 and 4220.	8 (20 centisecond or 1 second hello interval)
<b>VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks)</b> —maximum number of IP route tracks per VLAN.	All platforms except 4120 and 4220.	8
<b>VRRP (v2/v3-IPv4/IPv6)</b> —maximum number of VLAN tracks per VLAN.	All platforms except 4120 and 4220.	8
<p><b>VXLAN</b>—maximum virtual networks.</p> <p><b>Note:</b> Every VPLS instance/PSTag VLAN reduces this limit by 1.</p> <p><b>Note:</b> Assumption is all BUM (broadcast/unknown-unicast/multicast) FDB entries are pointing to the same set of RTEPs when all VNETs use explicit flooding. Depends on whether all VNETs use standard or explicit and the number of tenant VLAN ports.</p> <p><b>Note:</b> On ExtremeSwitching 5520 and 5420 switches, every VNET reduces this limit by 1. Every (VPLS/PSTag VLAN) + port reduces the limit by 1 on all platforms. Every VXLAN Underlay Multicast Tunnel reduces this limit by 1.</p>	<p>ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720</p> <p>4220, ExtremeSwitching 5320, 5420</p>	<p>2,048–4,000</p> <p>150-375</p>
<p><b>VXLAN</b>—maximum tenant VLANs plus port combinations</p> <p><b>Note:</b> Every (VPLS/PSTag VLAN) + port reduces the limit by 1.</p>	<p>ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720</p> <p>4220, ExtremeSwitching 5320, 5420</p>	<p>4,096</p> <p>150-375</p>

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>VXLAN</b> —maximum static MAC to IP bindings.  <b>Note:</b> Every FDB entry configured reduces this limit by 1.	All supported platforms	64,000
<b>VXLAN</b> —maximum RTEP IP addresses	All platforms	512
<b>VXLAN</b> —maximum virtual networks with dynamic learning and OSPF extensions for VXLAN	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	4,000
	4220, ExtremeSwitching 5320, 5420	375
<b>VXLAN</b> —or replicator role, maximum number of attached leafs per switch.	All platforms	256
<b>XML requests</b> —maximum number of XML requests per second.  <b>Note:</b> Limits are dependent on load and type of XML request. These values are dynamic ACL data requests.	All platforms	10 with 100 DACLs
<b>XNV authentication</b> —maximum number of VMs that can be processed (combination of local and network VMs).	All platforms except 4120 and 4220.	2,048
<b>XNV database entries</b> —maximum number of VM database entries (combination of local and network VMs).	All platforms except 4120 and 4220.	16,000
<b>XNV database entries</b> —maximum number of VPP database entries (combination of local and network VPPs).	All platforms except 4120 and 4220.	2,048
<b>XNV dynamic VLAN</b> —Maximum number of dynamic VLANs created (from VPPs /local VMs).	All platforms except 4120 and 4220.	2,048
<b>XNV local VPPs</b> —maximum number of XNV local VPPs.	All platforms except 4120 and 4220.	2,048 ingress 512 egress

**Table 10: Supported Limits for the Base License (continued)**

Metric	Product	Limit
<b>XNV policies/dynamic ACLs</b> —maximum number of policies/dynamic ACLs that can be configured per VPP.	All platforms except 4120 and 4220.	8 ingress 4 egress
<b>XNV network VPPs</b> —maximum number of XNV network VPPs. <sup>P</sup>	All platforms except 4120 and 4220.	2,048 ingress 512 egress

## Premier License Limits

The following table shows supported limits for features in the Premier License.

**Table 11: Supported Limits for the Premier License**

Metric	Product	Limit
<b>Anycast RP Using PIM</b> —maximum number of IPv4 Anycast RP set per VR.	All platforms	32
<b>Anycast RP Using PIM</b> —maximum number of IPv6 Anycast RP set per VR.	All platforms	32
<b>Anycast RP Using PIM</b> —RP peers per Anycast RP set.	All platforms	10
<b>BGP (aggregates)</b> —maximum number of BGP aggregates.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	256
	ExtremeSwitching 5320	204
<b>BGP (networks)</b> —maximum number of BGP networks.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	1,024
	ExtremeSwitching 5320	820
<b>BGP (peers)</b> —maximum number of BGP peers.  <b>Note:</b> With default keepalive and hold timers.  <b>Note:</b> Each BGPv4/BGPv6 peer handles a maximum of 50 routes.  <b>Note:</b> ECMP should not be enabled for BGP.	ExtremeSwitching 5420, 5520	128
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	300
	ExtremeSwitching 5320	100
<b>BGP (peer groups)</b> —maximum number of BGP peer groups.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	64
	ExtremeSwitching 5320	50

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>BGP (policy entries)</b> —maximum number of BGP policy entries per route policy.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	256
	ExtremeSwitching 5320	204
<b>BGP (policy statements)</b> —maximum number of BGP policy statements per route policy.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	1,024
	ExtremeSwitching 5320	820
<b>BGP multicast address-family routes</b> —maximum number of multicast address-family routes.	ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720	25,000
	ExtremeSwitching 5320, 5420, 5720-MW	20,000
<b>BGP (unicast address-family routes)</b> —maximum number of unicast address-family routes.	ExtremeSwitching 5420, 5520, 5720-MXW, Extreme Networks 7520, 7720 (at default)	25,000
	ExtremeSwitching 5320, 5720-MW	20,000
	ExtremeSwitching 5720-MW (with ALPM enabled)	163,000
	ExtremeSwitching 5720-MXW (with ALPM enabled)	288,000
	ExtremeSwitching 5520 (with ALPM enabled)	80,000
<b>BGP (non-unique routes)</b> —maximum number of non-unique BGP routes.	ExtremeSwitching 5420, 5520, 5720-MXW, Extreme Networks 7520, 7720	75,000
	ExtremeSwitching 5320, 5720-MW	60,000
<b>BGP ECMP</b> —maximum number of equal cost paths per multipath for BGP and BGPv6.	ExtremeSwitching 5320, 5420, 5520, Extreme Networks 7520, 7720	8
	ExtremeSwitching 5720	64
<b>BGPv6 (unicast address-family routes)</b> —maximum number of unicast address family routes.	ExtremeSwitching 5420, 5520, 5720-MW	6,000
	ExtremeSwitching 5720-MW (with ALPM enabled)	107,000
	ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720	10,000
	ExtremeSwitching 5720-MXW (with ALPM enabled)	213,000
	ExtremeSwitching 5320	4,800
	ExtremeSwitching 5520 (with ALPM enabled)	40,000



**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>BGPv6 (non-unique routes)</b> —maximum number of non-unique BGP routes.	ExtremeSwitching 5420, 5520, 5720-MW	18,000
	ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720	30,000
	ExtremeSwitching 5320	14,000
<b>EVPN EVI instances</b> —maximum number of EVI instances.	All platforms	1,024
<b>GRE Tunnels</b> —maximum number of GRE tunnels.	All platforms	255
<b>IS-IS adjacencies</b> —maximum number of supported IS-IS adjacencies.	All platforms	128
<b>IS-IS ECMP</b> —maximum number of equal cost paths per multipath for IS-IS.	All platforms	2, 4, or 8
<b>IS-IS interfaces</b> —maximum number of interfaces that can support IS-IS.	All platforms	255
<b>IS-IS routers in an area</b> —recommended maximum number of IS-IS routers in an area.	All platforms	256
<b>IS-IS route origination</b> —recommended maximum number of routes that can be originated by an IS-IS node.	All platforms	20,000
<b>IS-IS IPv4 L1 routes in an L1 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router.	All platforms	25,000
<b>IS-IS IPv4 L2 routes</b> —recommended maximum number of IS-IS Level 2 routes.	All platforms	25,000
<b>IS-IS IPv4 L1 routes in an L1/L2 router</b> —recommended maximum number of IS-IS Level 1 routes in an L1/L2 IS-IS router.	All platforms	20,000
<b>IS-IS IPv6 L1 routes in an L1 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router.	All platforms	10,000

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>IS-IS IPv6 L2 routes</b> —recommended maximum number of IS-IS Level 2 routes.	All platforms	10,000
<b>IS-IS IPv6 L1 routes in an L1/L2 router</b> —recommended maximum number of IS-IS Level 1 routes in a L1/L2 router.	All platforms	10,000
<b>IS-IS IPv4/IPv6 L1 routes in an L1 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	All platforms	20,000
<b>IS-IS IPv4/IPv6 L2 routes in an L2 router</b> —recommended maximum number of IS-IS Level 2 routes in a Level 2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	All platforms	20,000
<b>IS-IS IPv4/IPv6 L1 routes in an L1/L2 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1/Level2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	All platforms	20,000
<b>L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch</b> —maximum number of VCCV enabled VPLS VPNs.	ExtremeSwitching 5520, Extreme Networks 7520, 7720	16
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>L2 VPN: VPLS MAC addresses</b> —maximum number of MAC addresses learned by a switch.	ExtremeSwitching 5520	64,000
	Extreme Networks 7520, 7720	140,000
	Extreme Networks 5320, 5420, 5720	N/A
<b>L2 VPN: VPLS VPNs</b> —maximum number of VPLS virtual private networks per switch.	ExtremeSwitching 5520, Extreme Networks 7520, 7720	1,023
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>L2 VPN: VPLS peers</b> —maximum number of VPLS peers per VPLS instance.	ExtremeSwitching 5520, Extreme Networks 7520, 7720	64
	ExtremeSwitching 5320, 5420, 5720	N/A

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>L2 VPN: LDP pseudowires</b> —maximum number of pseudowires per switch.	ExtremeSwitching 5520	4,000
	Extreme Networks 7520, 7720	7,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>L2 VPN: static pseudowires</b> — maximum number of static pseudowires per switch.	ExtremeSwitching 5520	4,000
	Extreme Networks 7520, 7720	7,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>L2 VPN: Virtual Private Wire Service (VPWS) VPNs</b> — maximum number of virtual private networks per switch.	ExtremeSwitching 5520	1,023
	Extreme Networks 7520, 7720	4,090
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE interfaces</b> —maximum number of interfaces.	ExtremeSwitching 5520, Extreme 7520, 7720	32
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE ingress LSPs</b> — maximum number of ingress LSPs.	ExtremeSwitching 5520, Extreme 7520, 7720	2,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE egress LSPs</b> — maximum number of egress LSPs.	ExtremeSwitching 5520, Extreme 7520, 7720	2,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE transit LSPs</b> — maximum number of transit LSPs.	ExtremeSwitching 5520, Extreme 7520, 7720	4,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE paths</b> — maximum number of paths.	ExtremeSwitching 5520	1,000
	Extreme 7520, 7720	2,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE profiles</b> — maximum number of profiles.	ExtremeSwitching 5520	1,000
	Extreme 7520, 7720	2,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS RSVP-TE EROs</b> — maximum number of EROs per path.	ExtremeSwitching 5520, Extreme 7520, 7720	64
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS LDP peers</b> —maximum number of MPLS LDP peers per switch.	ExtremeSwitching 5520, Extreme 7520, 7720	128
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS LDP adjacencies</b> — maximum number of MPLS LDP adjacencies per switch.	ExtremeSwitching 5520, Extreme 7520, 7720	64
	ExtremeSwitching 5320, 5420, 5720	N/A

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>MPLS LDP ingress LSPs</b> —maximum number of MPLS LSPs that can originate from a switch.	ExtremeSwitching 5520, Extreme 7520, 7720	2,048
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS LDP-enabled interfaces</b> —maximum number of MPLS LDP configured interfaces per switch.	ExtremeSwitching 5520, Extreme 7520, 7720	128
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS LDP transit LSPs</b> —maximum number of MPLS transit LSPs per switch.	ExtremeSwitching 5520, Extreme 7520, 7720	4,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS LDP egress LSPs</b> —maximum number of MPLS egress LSPs that can terminate on a switch.	ExtremeSwitching 5520, Extreme 7520, 7720	4,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS static egress LSPs</b> —maximum number of static egress LSPs.	ExtremeSwitching 5520	4,000
	Extreme 7520, 7720	8,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS static ingress LSPs</b> —maximum number of static ingress LSPs.	ExtremeSwitching 5520, Extreme 7520, 7720	4,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MPLS static transit LSPs</b> —maximum number of static transit LSPs	ExtremeSwitching 5520, Extreme 7520, 7720	4,000
	ExtremeSwitching 5320, 5420, 5720	N/A
<b>MSDP active peers</b> —maximum number of active MSDP peers.	All platforms	64
<b>MSDP SA cache entries</b> —maximum number of entries in SA cache.	ExtremeSwitching 5320, 5420F	6,000
	ExtremeSwitching 5420M	8,000
	ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720	14,000
<b>MSDP maximum mesh groups</b> —maximum number of MSDP mesh groups.	All platforms	16
<b>OSPFv2/v3 ECMP</b> —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching 5320, 5420, 5520	8
	ExtremeSwitching 5720	64
<b>OSPFv2 areas</b> —as an ABR, how many OSPF areas are supported within the same switch.	All platforms	8

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>OSPFv2 external routes</b> —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching 5520	5,000
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	10,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420	4,000
	ExtremeSwitching 5320-24T-4X-XT	400
<b>OSPFv2 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720	2,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420	1,600
	ExtremeSwitching 5320-24T-4X-XT	500
<b>OSPFv2 inter-vr or leaking routes</b> —recommended maximum number of inter-vr routes contained in an OSPF LSDB.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	2,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT)	1,600
	ExtremeSwitching 5320-24T-4X-XT)	500
<b>OSPFv2 interfaces</b> —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	400
	ExtremeSwitching 5320	320
<b>OSPFv2 links</b> —maximum number of links in the router LSA.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	400
	ExtremeSwitching 5320	320
<b>OSPFv2 neighbors</b> —maximum number of supported OSPF adjacencies.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	128
	ExtremeSwitching 5320	96
<b>OSPFv2 routers in a single area</b> —recommended maximum number of routers in a single OSPF area.	ExtremeSwitching 5420, 5520	50
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	100
	ExtremeSwitching 5320	40
<b>OSPFv2 virtual links</b> —maximum number of supported OSPF virtual links.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	32
	ExtremeSwitching 5320	25
<b>OSPFv3 areas</b> —as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching 5420, 5520	16
	ExtremeSwitching 5720, Extreme Networks 7520, 7720	100
	ExtremeSwitching 5320	12

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>OSPFv3 external routes</b> —recommended maximum number of external routes.	ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720	10,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720-MW	7,500
	ExtremeSwitching 5420 ExtremeSwitching 5320-24T-4X-XT	6,000 300
<b>OSPFv3 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes.	ExtremeSwitching 5520	3,000
	ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720, Extreme Networks 7520, 7720	4,000
	ExtremeSwitching 5420 ExtremeSwitching 5320-24T-4X-XT	6,000 300
<b>OSPFv3 interfaces</b> —maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	256
	ExtremeSwitching 5320	192
<b>OSPFv3 neighbors</b> —maximum number of OSPFv3 neighbors.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	64
	ExtremeSwitching 5320	48
<b>OSPFv3 virtual links</b> —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720	16
	ExtremeSwitching 5320	12
<b>PIM IPv4 (maximum interfaces)</b> —maximum number of PIM active interfaces.	All platforms	255
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	All platforms	180
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per static rendezvous point.	All platforms	3,000 (depends on policy file limits)
<b>PIM IPv4 Limits</b> —maximum number of multicast sources per group.	All platforms	5,000
<b>PIM IPv4 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	All platforms	145
<b>PIM IPv4 Limits</b> —static rendezvous points.	All platforms	32

**Table 11: Supported Limits for the Premier License (continued)**

Metric	Product	Limit
<b>PIM IPv6 (maximum interfaces)</b> —maximum number of PIM active interfaces.	All platforms	255
<b>PIM IPv6 Limits</b> —maximum number of multicast sources per group.	All platforms	1,750
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	All platforms	70
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per static rendezvous point.	All platforms	3,000 (depends on policy file limits)
<b>PIM IPv6 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	All platforms	64
<b>PIM IPv6 Limits</b> —maximum number of secondary addresses per interface.	All platforms	70
<b>PIM IPv6 Limits</b> —static rendezvous points.	All platforms	32

## Notes for Limits Tables

- <sup>a</sup> The table shows the total available. When installing ACL rules bound to a set of ports, rules are replicated for each port if there are ACL counters and counter compression is not enabled, or if the ports are Extended Edge Switching extended ports.
- <sup>c</sup> When there are BFD sessions with minimal timer, sessions with default timer should not be used.
- <sup>f</sup> Effective capacity varies based on actual MAC addresses and VLAN IDs used and hash algorithm selected.
- <sup>g</sup> Based on "configure forwarding internal-tables more I2".
- <sup>h</sup> Based on "configure forwarding internal-tables more I3-and-ipmc".
- <sup>j</sup> The limit depends on setting configured with configure iproute reserved-entries.

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- <sup>m</sup> The IPv4 and IPv6 multicast entries share the same hardware tables, so the effective number of IPv6 multicast entries depends on the number of IPv4 multicast entries present and vice versa.
  - <sup>n</sup> If IGMP and MLD are simultaneously configured on the switch, the number of effective subscribers supported are lessened accordingly.
  - <sup>o</sup> The total of all PBR next hops on all flow redirects should not exceed 4,096.
  - <sup>p</sup> The number of XNV authentications supported based on system ACL limitations.
  - <sup>q</sup> Based on "configure forwarding internal-tables more routes".
  - <sup>r</sup> Based on `configure forwarding internal-tables more routes ipv6-mask-length 128`.
  - <sup>s</sup> Based on `configure forwarding internal-tables more 13-and-ipmc` or `configure forwarding internal-tables 12-and-13`.





# Open Issues, Known Behaviors, and Resolved Issues

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[Known Behaviors](#) on page 82

[Resolved Issues in Switch Engine 32.6.3-Patch1-8](#) on page 82

This chapter lists open software issues, limitations in Switch Engine system architecture (known issues), and resolved issues in Switch Engine.

## Open Issues

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The following are new open issues for supported features found in version 32.6.3-Patch1-8:

**Table 12:**

Defect Number	Description
<b>General</b>	
EXOS-35778	The <code>show snmpv3 counters</code> command will not provide statistics on SNMPv3 errors.
EXOS-35829	A stack using the <code>autoexec.xsf</code> file containing the <code>configure snmpv3 engine-id</code> command may cause a process crash and stack reboot. To resolve the problem remove the <code>configure snmpv3 engine-id</code> command from the <code>autoexec.xsf</code> file and reboot the stack. Once booted execute the <code>configure snmpv3 engine-id</code> command from the CLI. Standalone switches using the <code>autoexec.xsf</code> file support the <code>configure snmpv3 engine-id</code> command.

## Known Behaviors

The following is a limitation in Switch Engine architecture that has yet to be resolved.

**Table 13: Known Issues, Platform-Specific, and Feature Change Requests (CRs)**

Defect Number	Description
<b>General</b>	
EXOS-35439	"Error in script "/tmp/instaPortSetup.xsf" message is received when trying to assign an instant port profile to a port that has already been configured. All port configuration must be deleted before assigning an instant port profile to a port.
<b>4220 Series Switches</b>	
EXOS-35793	Chalet can not be used to install the OS on a 4220 Series switch. This is because there is not enough space on the 4220 Series file system to store the downloaded OS image.

## Resolved Issues in Switch Engine 32.6.3-Patch1-8

The following issues were resolved in Switch Engine EXOS-OS 32.6.3-Patch1-8. Version 32.6.3-Patch1-8 includes all fixes up to and including the following versions: 31.6, 31.7, 32.1, 32.2, 32.3, 32.4, 32.5, and 32.6.x. For information about those fixes, see the release notes for the specific release.

**Table 14: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 32.6.3-Patch1-8**

Defect Number	Description
<b>General</b>	
CFD-11098	Polling the dot1dTpFdbTable information through SNMP returns the value with an additional octet.
CFD-11164	Memory leak is observed in VLAN process when there are port flaps.
EXOS-35442	SNMPv3 Informs will work only if the user is configured with the authoritative engine ID, which is the engine ID of the Inform receiver. This impacts only SNMPv3 and not SNMPv2 Informs.
EXOS-35443	SNMP Informs will be counted along with traps in the show snmp vr vr-name command.
<b>SummitStack</b>	

**Table 14: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 32.6.3-Patch1-8 (continued)**

Defect Number	Description
CFD-11084	Ports inserted with 100Fx# optics in the backup/standby nodes of a stack go down after restarting the nodes.
EXOS-36062	Random slot failures are observed in EXOS stacks when it receives pause frames on its front panel ports.
EXOS-36063	Random slot failures are observed in EXOS stacks when there are high number of slow-path traffic.