



ExtremeXOS and Switch Engine Release Notes

Software Version 31.7.2-Patch1-21

9037396-08 Rev AA
July 2023



Copyright © 2023 All rights reserved.

Legal Notice

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

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

Trademarks

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

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

For additional information on Extreme Networks trademarks, see: www.extremenetworks.com/company/legal/trademarks

Open Source Declarations

Some software files have been licensed under certain open source or third-party licenses.

End-user license agreements and open source declarations can be found at: <https://www.extremenetworks.com/support/policies/open-source-declaration/>



Table of Contents

Preface.....	5
Conventions.....	5
Text Conventions.....	5
Platform-Dependent Conventions.....	7
Terminology.....	7
Send Feedback.....	7
Help and Support.....	8
Subscribe to Product Announcements.....	8
Related Publications.....	9
ExtremeXOS Publications.....	9
ExtremeCloud IQ - Site Engine Publications.....	9
Open Source Declarations.....	9
Overview.....	10
New in this Release.....	10
New Hardware Supported in ExtremeXOS and Switch Engine 31.7.....	11
Dual Network Operating System Information.....	11
Security Information.....	11
Linux Kernel.....	11
OpenSSL Version.....	12
Upgrading ExtremeXOS and Switch Engine.....	12
Stacking: Upgrading from ExtremeXOS 30.2 and Earlier.....	12
Newly Purchased Switches Require Software Upgrade.....	13
Default ExtremeXOS and Switch Engine Settings.....	13
Image File Names.....	15
New and Corrected Features in ExtremeXOS and Switch Engine 31.7.....	15
Enhanced Bluetooth Support.....	16
Changing the Network Operating System.....	16
Making Your Initial Network Operating System Selection.....	16
Changing Your Network Operating System.....	17
ExtremeCloud IQ Agent Support.....	17
Extreme Hardware/Software Compatibility and Recommendation Matrices.....	19
Compatibility with ExtremeCloud IQ - Site Engine.....	19
Supported MIBs.....	20
Tested Third-Party Products.....	20
Tested RADIUS Servers.....	20
Extreme Switch Security Assessment.....	20
DoS Attack Assessment.....	20
ICMP Attack Assessment.....	20
Port Scan Assessment.....	20
Limits.....	21

Limits Overview.....	21
Value Edge License Limits.....	23
Edge and Base License Limits.....	36
Advanced Edge and Base License Limits.....	72
Core and Premier License Limits.....	80
Notes for Limits Tables.....	87
Open Issues, Known Behaviors, and Resolved Issues.....	89
Open Issues.....	89
Known Behaviors.....	89
Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-21.....	90
Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-8.....	91
Resolved Issues in ExtremeXOS and Switch Engine 31.7.2.....	92
Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-98.....	94
Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-77.....	95
Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-56.....	96
Resolved Issues in ExtremeXOS and Switch Engine 31.7-Patch1-36.....	97
Resolved Issues in ExtremeXOS and Switch Engine 31.7-Patch1-17.....	98
Resolved Issues in ExtremeXOS and Switch Engine 31.7.....	99



Preface

Read the following topics to learn about:

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

Conventions

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> .
Key names	Key names are written in boldface, for example Ctrl or Esc . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del
<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.
NEW!	New information. In a PDF, this is searchable text.

Table 3: Command syntax

Convention	Description
bold text	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.
{ x y z }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, 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/). 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.

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.

Help and Support

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

Extreme Portal

Search the GTAC (Global Technical Assistance Center) knowledge base; manage support cases and service contracts; download software; and obtain product licensing, training, and certifications.

The Hub

A forum for Extreme Networks customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.

Call GTAC

For immediate support: (800) 998 2408 (toll-free in U.S. and Canada) or 1 (408) 579 2800. For the support phone number in your country, visit www.extremenetworks.com/support/contact.

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

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

Subscribe to Product Announcements

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

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

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

Related Publications

ExtremeXOS Publications

- *ExtremeXOS 31.7 Command Reference Guide*
- *ExtremeXOS and Switch Engine 31.7 Feature License Requirements*
- *ExtremeXOS 31.7 User Guide*
- *ExtremeXOS Release Notes*
- *ExtremeXOS Quick Guide*
- *ACL Solutions Guide*
- *Extreme Hardware/Software Compatibility and Recommendation Matrices*
- *Extreme Optics Compatibility*
- *Switch Configuration with Chalet for ExtremeXOS 21.x and Later*
- *Using AVB with Extreme Switches*

ExtremeCloud IQ - Site Engine Publications

- *Extreme Management Center User Guide*
- ExtremeCloud IQ - Site Engine online help is available by clicking the ? icon on all screens. The online help provides detailed explanations of how to configure and manage your network using ExtremeCloud IQ - Site Engine.

Open Source Declarations

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



Overview

- [New in this Release](#) on page 10
- [New Hardware Supported in ExtremeXOS and Switch Engine 31.7](#) on page 11
- [Security Information](#) on page 11
- [Upgrading ExtremeXOS and Switch Engine](#) on page 12
- [Newly Purchased Switches Require Software Upgrade](#) on page 13
- [Default ExtremeXOS and Switch Engine Settings](#) on page 13
- [Image File Names](#) on page 15
- [New and Corrected Features in ExtremeXOS and Switch Engine 31.7](#) on page 15
- [Changing the Network Operating System](#) on page 16
- [ExtremeCloud IQ Agent Support](#) on page 17
- [Extreme Hardware/Software Compatibility and Recommendation Matrices](#) on page 19
- [Compatibility with ExtremeCloud IQ - Site Engine](#) on page 19
- [Supported MIBs](#) on page 20
- [Tested Third-Party Products](#) on page 20
- [Extreme Switch Security Assessment](#) on page 20

These release notes documents ExtremeXOS and Switch Engine 31.7, which adds features and resolves software deficiencies.



Important

ExtremeXOS and Switch Engine version 31.6.1.3 was removed from the portal due to a defect. Use version 31.6.2.1 instead. For more information, see [Software Recall Notice SRN-2022-001](#).

New in this Release

Release 31.6 introduced new names for the network operating systems running on Universal hardware. ExtremeXOS (EXOS) was renamed to Switch Engine and VSP Operating System Software (VOSS) was renamed to Fabric Engine.

The following platforms support Switch Engine 31.7:

- ExtremeSwitching 5320 Series
- ExtremeSwitching 5420 Series

- ExtremeSwitching 5520 Series



Note

Upgrading the firmware from an older version of ExtremeXOS to Switch Engine 31.7 on the ExtremeSwitching 5420 and 5520 series will change the SNMP SysObjectID value. This change might affect SNMP-based management systems.



Note

For non-Universal Hardware switches, the names of the network operating systems will continue to be VSP Operating System Software (VOSS) and ExtremeXOS (EXOS).

New Hardware Supported in ExtremeXOS and Switch Engine 31.7

The following new hardware is supported in ExtremeXOS and Switch Engine 31.7:

Table 4: ExtremeSwitching 5320 Series Switches

ExtremeSwitching 5320-16P-4XE	16 10/100/1000BASE-T full/half duplex MACsec capable ports with 802.3at Type 2 PoE+ (30W), 4 10G unpopulated SFP+ ports, and one AC PSU
ExtremeSwitching 5320-16P-4XE-DC	16 10/100/1000BASE-T full/half duplex MACsec capable ports with 802.3at Type 2 PoE+ (30W), 4 10G unpopulated SFP+ ports, and one DC PSU

Dual Network Operating System Information

All Universal Hardware switches can run two different network operating systems: Switch Engine (default, formerly EXOS) or Fabric Engine (formerly VOSS). When you power up the switch for the first time, you must select an operating system.

For more information about selecting a network operating system, or changing it after initial selection, see [Changing the Network Operating System](#) on page 16.

Security Information

The following section covers important security information for ExtremeXOS and Switch Engine 31.7.

Linux Kernel

ExtremeXOS and Switch Engine 31.7 use Linux Kernel 5.4 for ExtremeSwitching X465, X590, X690, X695, X870, 5320, 5420 and 5520 series switches, and Linux Kernel 4.14 for all other switches.

OpenSSL Version

ExtremeXOS and Switch Engine 31.7 use FIPS openssl-fips-2.0.16.

Upgrading ExtremeXOS and Switch Engine

For instructions about upgrading ExtremeXOS and Switch Engine software, see *Software Upgrade and Boot Options* in [ExtremeXOS 31.7 User Guide](#).

An ExtremeXOS or 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 error message `Error: Image can only be installed to the non-active partition.` appears. An ExtremeXOS or Switch Engine modular software package (.xmod file) can still be downloaded and installed on either the active or alternate partition.

Stacking: Upgrading from ExtremeXOS 30.2 and Earlier

You cannot automatically update a switch running ExtremeXOS 30.2 or earlier to ExtremeXOS 30.3 or later due to a file system compatibility issue. If a switch has ExtremeXOS 30.2 or earlier, prior to inserting the switch into the stack topology, you need to upgrade the switch manually:

1. To download and install a new image, the active partitions (primary or secondary) of all non-master nodes must match the active partition of the master node.
 - a. To determine the active partition selected on all nodes and the ExtremeXOS versions installed in each partition, use the `show slot {slot {detail} | detail }` command with the `detail` option. If the node being upgraded is running on the primary partition, then the new image is downloaded and installed on the secondary partition.
 - b. If the active partition is different on some nodes, the action you take depends on what is stored in both partitions:

If both primary and secondary partitions have the same ExtremeXOS release, you can use the following commands to cause a node to use the same active image as the rest of the stack:

```
use image {primary | secondary} slot slot-number
reboot slot slot-number
```

2. Download a new ExtremeXOS software release and install it on all nodes on the active topology using the command: `download [url url {vr vrname} | image [active | inactive] [[hostname | ipaddress] filename {{vr} vrname} {block-size block_size}] {partition} {install {reboot}}`
3. Restart all nodes in the new release using `reboot {{time mon day year hour min sec} | cancel} {slot slot-number} | node-address node-address | stack-topology {as-standby} | all} | rolling}`

Newly Purchased Switches Require Software Upgrade

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

For information about upgrading the ExtremeXOS or Switch Engine software, see the *ExtremeXOS Upgrade Process* topic in the *Software Upgrade and Boot Options* chapter of the *ExtremeXOS 31.7 User Guide*.

Default ExtremeXOS and Switch Engine Settings

The following table shows the default settings for ExtremeXOS and Switch Engine starting with version 31.6.

Table 5: Default ExtremeXOS and Switch Engine Settings

Feature	31.6 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. a
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. a
DHCP	Disabled.
DNS Cache Resolver and Analytics	Disabled.
IPFIX	Disabled.
IP NAT	Disabled.
EAPS	Disabled.
EDP	Enabled on management port.
ELRP	Disabled.
ESRP	Disabled.
Extended Edge Switching (VPEX)	Disabled.

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

Table 5: Default ExtremeXOS and Switch Engine Settings (continued)

Feature	31.6 and later
ExtremeCloud IQ	Enabled
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. a
Logging memory buffer	Generate an event when the logging memory buffer exceeds 90% of capacity. a
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	Not supported.
OSPF	Disabled.
OVSDB	Disabled.
Passwords	Plain text password entry not allowed. a
PIM	Disabled.
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.

Table 5: Default ExtremeXOS and Switch Engine Settings (continued)

Feature	31.6 and later
SNMP server	Disabled. a
SSH	Disabled.
Stacking	—
Stacking auto-discovery	Enabled.
STP	Enabled.
Syslog	Disabled.
TACACS	Disabled.
Telnet	Disabled. a
VPEX IP Multicast Replication	Controlling Bridge
VPLS	All newly created VPLS instances are enabled.
Watchdog	Enabled.
Web HTTP server	Disabled. a

Image File Names

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

Table 6: Image Types (Prefixes)

Switches	Image File Type (Prefix)
ExtremeSwitching X465, X690, X695, X590, and X870	onie- Example: onie-22.2.1.2.xos Note: These image files use the Open Network Install Environment (ONIE).
ExtremeSwitching X440-G2, X450-G2, X460-G2, X670-G2, X620	summitX- Example: summitX-22.2.1.2.xos
ExtremeSwitching X435	summitlite_arm- Example: summitlite_arm-30.5.0.102.xos
ExtremeSwitching 5320, 5420, 5520	summit_arm Example: summit_arm-31.1.0.3.xos

New and Corrected Features in ExtremeXOS and Switch Engine 31.7

This section lists the new and corrected features supported in the 31.7 software:

Enhanced Bluetooth Support

Beginning with Release 31.7, Bluetooth is supported on platforms that do not support VR-Management, including the ExtremeSwitching 5320 Series. With this support, clients can connect using Link Local IPv4 addresses.



Note

Bluetooth clients will not be allocated with private IP addresses by the switch.

Supported Platforms

ExtremeSwitching 5320 series switches.

Changing the Network Operating System

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

Making Your Initial Network Operating System Selection

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

- **ExtremeCloud™ IQ** (see [ExtremeCloud IQ Agent Support](#) on page 17)—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/>.
- **Extreme Management Center**— see [Extreme Management Center User Guide](#)
- **Manually during boot-up:**
 - **Bootloader**—When the message `Starting Default Bootloader ...Press and hold the <spacebar>` to enter the bootrom appears, press and hold the **space bar** until the boot menu appears (you have 30 seconds):

```

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

EXOS: Default
EXOS: Primary 31.6..
EXOS: Secondary 31.6..
EXOS: Primary 31.6.. with default configuration
EXOS: Secondary 31.6.. 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**.

- **Safe defaults mode start-up menu**—When the question `Would you like to change the switch OS to VOSS? [y/N/q]` appears:
 - 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 [ExtremeXOS 31.7 User Guide](#).

Changing Your Network Operating System

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 [ExtremeXOS 31.7 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

ExtremeXOS and Switch Engine 31.7 support ExtremeCloud IQ. For network administrators looking for unified management of access points, switches, and 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, and OS choice.
- Offers unlimited data duration for more informed networking decisions.

This release supports device discovery, basic monitoring, visibility into homogenous stacking, and the ability to configure an optional user-defined virtual router (VR) and server address 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 7: Supported Platforms

Switch Series	Switch Models
ExtremeSwitching X435	X435-8T-4S X435-8P-4S X435-8P-2T-W X435-24T-4S X435-24P-4S
ExtremeSwitching X440-G2	X440-G2-24P-10GE4 X440-G2-48P-10GE4 X440-G2-12T-10GE4 X440-G2-12P-10GE4 X440-G2-24T-10GE4 X440-G2-48T-10GE4
ExtremeSwitching X450-G2	X450-G2-24P-10GE X450-G2-48P-10GE X450-G2-24P-GE4 X450-G2-48P-GE4
ExtremeSwitching X460-G2	X460-G2-24P-10GE4 X460-G2-48P-10GE4 X460-G2-16MP-32P-10GE4 X460-G2-24P-48HP-10GE4
ExtremeSwitching X465	X465-48P X465-24MU-24W X465-24W X465-48W X465-24MU
ExtremeSwitching 5320	5320-48T-8XE 5320-48P-8XE 5320-24T-8XE 5320-24P-8XE 5320-16P-4XE 5320-16P-4XE-DC

Table 7: Supported Platforms (continued)

Switch Series	Switch Models
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

Extreme Hardware/Software Compatibility and Recommendation Matrices

Summit, ExtremeSwitching, and E4G Components: ExtremeXOS Software Support provides information about the minimum version of ExtremeXOS and Switch Engine 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 EXOS releases for EXOS and Switch Engine-based hardware platforms, see *ExtremeXOS Release Recommendations*.

The latest versions of this and other ExtremeXOS and Switch Engine guides are at: www.extremenetworks.com/documentation/.

Compatibility with ExtremeCloud IQ - Site Engine

ExtremeXOS 31.7 is compatible with the version of ExtremeCloud IQ - Site Engine shown in this table: http://emc.extremenetworks.com/content/common/releasenotes/extended_firmware_support.htm

Switch Engine 31.7 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

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 [ExtremeXOS 31.7 User Guide](#).

Tested Third-Party Products

The following third-party products have been tested for ExtremeXOS and Switch Engine 31.7.

Tested RADIUS Servers

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS

Extreme Switch Security Assessment

DoS Attack Assessment

Tools used to assess DoS attack vulnerability:

- Network Mapper (NMAP)

ICMP Attack Assessment

Tools used to assess ICMP attack vulnerability:

- SSPing
- Twinge
- Nuke
- WinFreeze

Port Scan Assessment

Tools used to assess port scan assessment:

- Nessus



Limits

- [Limits Overview](#) on page 21
- [Value Edge License Limits](#) on page 23
- [Edge and Base License Limits](#) on page 36
- [Advanced Edge and Base License Limits](#) on page 72
- [Core and Premier License Limits](#) on page 80
- [Notes for Limits Tables](#) on page 87

This chapter summarizes the supported limits in ExtremeXOS and Switch Engine 31.7.

Limits Overview

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

- [Value Edge License Limits](#) on page 23
- [Edge and Base License Limits](#) on page 36
- [Advanced Edge and Base License Limits](#) on page 72
- [Core and Premier License Limits](#) on page 80

The ExtremeSwitching family of switches includes two categories of switches with different license levels:

Switch Category	Switches	Applicable License Levels
Non-universal switches	X435 *, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, X870	Value Edge *, Edge, Advanced Edge, Core
Universal hardware switches	5320, 5420, 5520	Base, Premier
Note: * The X435 is the only switch that supports the Value Edge license level.		

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

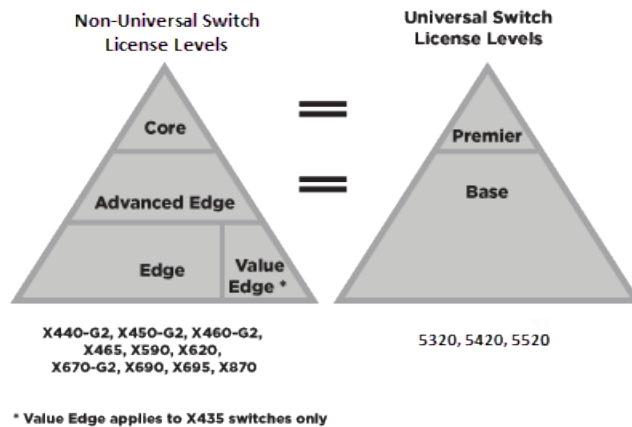


Figure 1: License Levels for non-Universal and Universal Switches

The non-universal and universal switch license levels correlate in the following way:

Premier = Core

Base = Advanced Edge + AVB

For more information about licenses, see [ExtremeXOS and Switch Engine 31.7 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 ExtremeXOS 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 (for example, Extended

Edge Switching X670-G2 series switches) in use. For applicable limits, see the following tables for the controlling bridge you are using.

Value Edge License Limits

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

Table 8: Supported Limits for Value Edge License

Metric	Product	Limit
AAA (local) —maximum number of admin and local user accounts.	ExtremeSwitching X435	16
Access lists (meters) —maximum number of meters.	ExtremeSwitching X435	512 ingress
Access lists (policies) —suggested maximum number of lines in a single policy file.	ExtremeSwitching X435	300,000
Access lists (policies) —maximum number of rules in a single policy file. ^a	ExtremeSwitching X435	1,024 ingress 0 egress
Access lists (slices) —number of ACL slices.	ExtremeSwitching X435	8 ingress only
ACL Per Port Meters —number of meters supported per port.	ExtremeSwitching X435	8
ACL port ranges	ExtremeSwitching X435	32
Meters Packets-Per-Second Capable	ExtremeSwitching X435	Yes
AVB (audio video bridging) —maximum number of active streams.	ExtremeSwitching X435	512
BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per virtual router.	ExtremeSwitching X435	8
BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per VLAN.	ExtremeSwitching X435	8
BOOTP/DHCP relay —maximum number of DHCPv4/v6 relay agents.	ExtremeSwitching X435	30
Connectivity fault management (CFM) —maximum number of CFM domains.	ExtremeSwitching X435	8

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
CFM—maximum number of CFM associations.	ExtremeSwitching X435	256
CFM—maximum number of CFM up end points.	ExtremeSwitching X435	32
CFM—maximum number of CFM down end points.	ExtremeSwitching X435	32
CFM—maximum number of CFM remote end points per up/down end point.	ExtremeSwitching X435	2,000
CFM—maximum number of dot1ag ports.	ExtremeSwitching X435	128
CFM—maximum number of CFM segments.	ExtremeSwitching X435	1,000
CFM—maximum number of MIPs.	ExtremeSwitching X435	256
DHCPv6 Prefix Delegation Snooping —Maximum number of DHCPv6 prefix delegation snooped entries.	ExtremeSwitching X435	30 (with static routes)
DHCP snooping entries —maximum number of DHCP snooping entries.	ExtremeSwitching X435	30
Dynamic ACLs —maximum number of ACLs processed per second. Note: Limits are load-dependent.	ExtremeSwitching X435 with 50 DACLs with 500 DACLs	10 5
EAPS domains —maximum number of EAPS domains.	ExtremeSwitching X435	4
EAPSV1 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X435	1,000
ERPS domains —maximum number of ERPS domains with or without CFM configured.	ExtremeSwitching X435	4
ERPSV1 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X435	1,000
ELSM (vlan-ports) —maximum number of VLAN ports.	ExtremeSwitching X435	2,000

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
Forwarding rate —maximum L3 software forwarding rate.	ExtremeSwitching X435	7,844 pps
FDB (unicast blackhole entries) —maximum number of unicast blackhole FDB entries.	ExtremeSwitching X435	16,019
FDB (multicast blackhole entries) —maximum number of multicast blackhole FDB entries.	ExtremeSwitching X435	16,384
FDB (maximum L2 entries) —maximum number of MAC addresses.	ExtremeSwitching X435	16,384 ⁹
FDB (maximum L2 entries) —maximum number of multicast FDB entries.	ExtremeSwitching X435	512
Identity management —maximum number of Blacklist entries.	ExtremeSwitching X435	512
Identity management —maximum number of Whitelist entries.	ExtremeSwitching X435	512
Identity management —maximum number of roles that can be created.	ExtremeSwitching X435	64
Identity management —maximum role hierarchy depth allowed.	ExtremeSwitching X435	5
Identity management —maximum number of attribute value pairs in a role match criteria.	ExtremeSwitching X435	16
Identity management —maximum number of child roles for a role.	ExtremeSwitching X435	8
Identity management —maximum number of policies/dynamic ACLs that can be configured per role.	ExtremeSwitching X435	8
Identity management —maximum number of LDAP servers that can be configured.	ExtremeSwitching X435	8

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
Identity management —maximum number of Kerberos servers that can be configured.	ExtremeSwitching X435	20
Identity management —maximum database memory size.	ExtremeSwitching X435	512
Identity management —recommended number of identities per switch. Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	ExtremeSwitching X435	100
Identity management —recommended number of ACL entries per identity. Note: Number of ACLs per identity, based on system ACL limitation.	ExtremeSwitching X435	20
Identity management —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file.	ExtremeSwitching X435	500
IGMP snooping per VLAN filters —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	ExtremeSwitching X435	500
IGMPv2 subscriber —maximum number of IGMPv2 subscribers per port. ⁿ	ExtremeSwitching X435	2,500
IGMPv2 subscriber —maximum number of IGMPv2 subscribers per switch. ⁿ	ExtremeSwitching X435	12,500
IGMPv3 maximum source per group —maximum number of source addresses per group.	ExtremeSwitching X435	250
IGMPv3 subscriber —maximum number of IGMPv3 subscribers per port. ⁿ	ExtremeSwitching X435	1,000

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
IGMPv3 subscriber —maximum number of IGMPv3 subscribers per switch. ⁿ	ExtremeSwitching X435	10,000
IP ARP entries in software —maximum number of IP ARP entries in software. Note: Might be limited by hardware capacity of FDB (maximum L2 entries).	ExtremeSwitching X435	20,424
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.	ExtremeSwitching X435	509 ^h
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.”	ExtremeSwitching X435	500 ^h
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.	ExtremeSwitching X435	3,100 ^h
IPv4 routes —maximum number of static IPv4 routes in software (combination of unicast and multicast routes).	ExtremeSwitching X435	32
IPv4 routes (LPM entries in hardware) — number of IPv4 routes in hardware.	ExtremeSwitching X435	32
IPv6 addresses on an interface —maximum number of IPv6 addresses on an interface.	ExtremeSwitching X435	15

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
IPv6 addresses on a switch —maximum number of IPv6 addresses on a switch.	ExtremeSwitching X435	15
IPv6 host entries in hardware —maximum number of IPv6 neighbor entries in hardware.	ExtremeSwitching X435	500
IPv6 routes in software — maximum number of static IPv6 routes in software.	ExtremeSwitching X435	16
IPv6 routes (LPM entries in hardware) —maximum number of IPv6 routes in hardware.	ExtremeSwitching X435	16
IP router interfaces — maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X435	30
IP unicast static routes —maximum number of permanent IP unicast routes.	ExtremeSwitching X435	32
IP multinetting (secondary IP addresses) —maximum number of secondary IP addresses per VLAN.	ExtremeSwitching X435	30
Jumbo frames —maximum size supported for jumbo frames, including the CRC.	ExtremeSwitching X435	9,216
Layer-2 IPMC forwarding caches —(IGMP/MLD/PIM snooping) in mac-vlan mode. Note: <ul style="list-style-type: none"> • The internal lookup table configuration used is "I2-and-I3". • IPv6 and IPv4 L2 IPMC scaling is the same for this mode. • Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same. 	ExtremeSwitching X435	5,000

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
<p>Layer-3 IPv4 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).</p> <p>Note:</p> <ul style="list-style-type: none"> Limit value is the same for MVR senders, PIM Snooping entries, PIM SSM cache, IGMP senders, PIM cache. Assumes source-group-vlan mode as look up key. Layer 3 IPMC cache limit in mixed mode also has the same value. 	ExtremeSwitching X435	1,500
<p>Layer-3 IPv6 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).</p> <p>Note:</p> <ul style="list-style-type: none"> Limit value is the same for MLD sender per switch, PIM IPv6 cache. Assumes source-group-vlan mode as lookup key. 	ExtremeSwitching X435	700
<p>Load sharing—maximum number of load sharing groups.</p> <p>Note: 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.</p>	ExtremeSwitching X435	8
<p>Load sharing—maximum number of ports per load-sharing group.</p>	ExtremeSwitching X435 (standalone only)	8
<p>Logged messages—maximum number of messages logged locally on the system.</p>	ExtremeSwitching X435	20,000

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
MAC-based security —maximum number of MAC-based security policies.	ExtremeSwitching X435	1,024
MAC Locking —Maximum number of MAC locking stations that can be learned on a port.	ExtremeSwitching X435	64 (static MAC locking stations) 600 (first arrival MAC locking stations)
Meters —maximum number of meters.	ExtremeSwitching X435	512
Maximum mirroring instances.	ExtremeSwitching X435	1 (egress)
Mirroring (filters) —maximum number of mirroring filters. Note: This is the number of filters across all the active mirroring instances.	ExtremeSwitching X435	128
Mirroring, one-to-many (filters) —maximum number of one-to-many mirroring filters. Note: This is the number of filters across all the active mirroring instances.	ExtremeSwitching X435	128
Mirroring, one-to-many (monitor port) —maximum number of one-to-many monitor ports.	ExtremeSwitching X435	1
Multicast listener discovery (MLD) snooping per-VLAN filters —maximum number of VLANs supported in per-VLAN MLD snooping mode.	ExtremeSwitching X435	63
Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per port. ⁿ	ExtremeSwitching X435	2,500
Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per switch. ⁿ	ExtremeSwitching X435	12,500

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per port. ⁿ	ExtremeSwitching X435	2,000
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per switch. ⁿ	ExtremeSwitching X435	10,000
Multicast listener discovery (MLD)v2 maximum source per group —maximum number of source addresses per group.	ExtremeSwitching X435	200
Network Login —maximum number of clients being authenticated on MAC-based VLAN enabled ports.	ExtremeSwitching X435	1,024
Network Login —maximum number of dynamic VLANs.	ExtremeSwitching X435	1,024
Network Login VLAN VSAs —maximum number of VLANs a client can be authenticated on at any given time.	ExtremeSwitching X435	10
Network Service Identifiers (NSI)/VLAN mappings —maximum number of VLANs to NSI mappings.	ExtremeSwitching X435	94
ONEPolicy Roles/Profiles —maximum number of policy roles/profiles.	ExtremeSwitching X435	63
ONEPolicy Rules per Role/Profile —maximum number of rules per role/policy.	ExtremeSwitching X435	IPv4 Rules: 128 L2 Rules: 56
ONEPolicy Authenticated Users per Switch —maximum number of authenticated users per switch with TCI-Overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching X435	192

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port per switch with TCI overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching X435	187
ONEPolicy Permit/Deny Traffic Classification Rules Types —total maximum number of unique permit/deny traffic classification rules types (system/stack).	ExtremeSwitching X435	184
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype).	ExtremeSwitching X435	128
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port).	ExtremeSwitching X435	56
Policy-based routing (PBR) redundancy —maximum number of flow-redirects.	ExtremeSwitching X435	256 ^o
Policy-based routing (PBR) redundancy —maximum number of next hops per each flow-direct.	ExtremeSwitching X435	32 ^o
Private VLANs —maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN.	ExtremeSwitching X435	15

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
<p>Private VLANs—maximum number of private VLANs with an IP address on the network VLAN.</p> <p>Note: This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports.</p>	ExtremeSwitching X435	15
<p>Private VLANs—maximum number of private VLANs in an L2-only environment.</p>	ExtremeSwitching X435	15
<p>Route policies—suggested maximum number of lines in a route policy file.</p>	ExtremeSwitching X435	10,000
<p>Spanning Tree (maximum STPDs)—maximum number of Spanning Tree Domains on port mode EMISTP.</p>	ExtremeSwitching X435	16
<p>Spanning Tree PVST+—maximum number of port mode PVST domains.</p> <p>Note: 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, on a 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 ($4,096 \div 256$).</p>	ExtremeSwitching X435	128
<p>Spanning Tree—maximum number of multiple spanning tree instances (MSTI) domains.</p>	ExtremeSwitching X435	16
<p>Spanning Tree—maximum number of VLANs per MSTI.</p> <p>Note: Maximum number of 10 active ports per VLAN when all 100 VLANs are in one MSTI.</p>	ExtremeSwitching X435	100

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
Spanning Tree —maximum number of VLANs on all MSTP instances.	ExtremeSwitching X435	256
Spanning Tree (802.1d domains) —maximum number of 802.1d domains per port.	ExtremeSwitching X435	1
Spanning Tree (number of ports) —maximum number of ports including all Spanning Tree domains.	ExtremeSwitching X435	1,024
Spanning Tree (maximum VLANs) —maximum number of STP-protected VLANs (dot1d and dot1w).	ExtremeSwitching X435	256
SSH (number of sessions) —maximum number of simultaneous SSH sessions.	ExtremeSwitching X435	8
Static MAC multicast FDB entries —maximum number of permanent multicast MAC entries configured into the FDB.	ExtremeSwitching X435	1,024
Syslog servers —maximum number of simultaneous Syslog servers that are supported.	ExtremeSwitching X435	16
Syslog targets —maximum number of configurable Syslog targets.	ExtremeSwitching X435	16
Telnet (number of sessions) —maximum number of simultaneous Telnet sessions.	ExtremeSwitching X435	8
Virtual routers —maximum number of user-created virtual routers that can be created on a switch.	ExtremeSwitching X435	16 (local-only VRs)
Virtual router forwarding (VRFs) —maximum number of VRFs that can be created on a switch.	ExtremeSwitching X435	16 (local-only VRFs)
Note: * Subject to other system limitations.		

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
VLAN aggregation —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs.	ExtremeSwitching X435	1,000
VLANs —includes all VLANs.	ExtremeSwitching X435	4,094
VLANs (Layer 2) —maximum number of Layer 2 VLANs.	ExtremeSwitching X435	4,094
VLANs (Layer 3) —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X435	IPv4: 30 IPv6: 15
VLANs (maximum active port-based) —maximum active ports per VLAN when 1,000 VLANs are configured with default license.	ExtremeSwitching X435	28
VLAN Port Interfaces (VPIF) —maximum number of VLAN port interfaces.	ExtremeSwitching X435	4,090
VLANs (maximum active protocol-sensitive filters) —number of simultaneously active protocol filters in the switch.	ExtremeSwitching X435	16
VLAN translation —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN.	ExtremeSwitching X435	15
VLAN translation —maximum number of translation VLAN pairs with an IP address on the translation VLAN. Note: 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.	ExtremeSwitching X435	15
VLAN translation —maximum number of translation VLAN pairs in an L2-only environment.	ExtremeSwitching X435	15

Table 8: Supported Limits for Value Edge License (continued)

Metric	Product	Limit
VMAN CEP —maximum number of CVIDs.	ExtremeSwitching X435	192
XML requests —maximum number of XML requests per second. Note: Limits are dependent on load and type of XML request. These values are dynamic ACL data requests.	ExtremeSwitching X435	10 with 100 DACLs

Edge and Base License Limits

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

Table 9: Supported Limits for Edge and Base License

Metric	Product	Limit
AAA (local) —maximum number of admin and local user accounts.	All platforms, except X435	16
Access lists (meters) —maximum number of meters.	ExtremeSwitching X620, X440-G2	1,024 ingress 256 egress
	ExtremeSwitching X670-G2, X450-G2, X460-G2	1,024 ingress 512 egress
	ExtremeSwitching X870, X690, X590, X465	2,048 ingress 512 egress
	ExtremeSwitching X695	6,000 ingress 2,000 egress
	ExtremeSwitching 5320	2,048
	ExtremeSwitching 5420	3,000 ingress 1,024 egress
Access lists (policies) —suggested maximum number of lines in a single policy file.	All platforms, except X435	300,000
	ExtremeSwitching 5320, 5420, 5520	N/A

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Access lists (policies) — maximum number of rules in a single policy file. ^a	ExtremeSwitching X460-G2, X450-G2, X670-G2	4,096 ingress 1,024 egress
	ExtremeSwitching X620, X440-G2	2,048 ingress 512 egress
	ExtremeSwitching X870	3,072 ingress 1,024 egress
	ExtremeSwitching X690, X590, X465, X695	8,192 ingress 1,024 egress
	ExtremeSwitching 5320-48T/P	8,192 ingress 1,024 egress
	ExtremeSwitching 5320-24T/P, 5320-16P	8,192 ingress 512 egress
	ExtremeSwitching 5420M	18,000 (rules double-wide (160-bit)) ingress 36,000 (rules single-wide (80-bit, default)) ingress 1,024 egress
	ExtremeSwitching 5420F	8,000 (rules double-wide (160-bit)) ingress 16,000 (rules single-wide (80-bit, default)) ingress 1,024 egress
ExtremeSwitching 5520	9,216 ingress 1,024 egress	
Access lists (policies) — maximum number of rules in a single policy file in first stage (VFP).	ExtremeSwitching X450-G2, X460-G2 ExtremeSwitching, X590, X465, 5520	2,048 ingress only
	ExtremeSwitching X670-G2, X870, X690, X695, 5320-48T/P, 5420	1,024 ingress only
	ExtremeSwitching X620, X440-G2, 5320-24T/P, 5320-16P	512 ingress only

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Access lists (slices) — number of ACL slices.	ExtremeSwitching X460-G2, X450-G2	16 ingress 4 egress
	ExtremeSwitching X670-G2, X690, X590, X465, X695	12 ingress 4 egress
	ExtremeSwitching X440-G2, X620	8 ingress 4 egress
	ExtremeSwitching X870	4 ingress 4 egress
	ExtremeSwitching 5320, 5420, 5520	18 ingress 4 egress
Access lists (slices) — number of ACL slices in first stage (VFP).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X465, X620, X440-G2, X870, X690, X590, X695, 5320, 5420, 5520	4 ingress only
ACL Per Port Meters —number of meters supported per port.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	16
	ExtremeSwitching 5320, 5420, 5520	2,048
ACL port ranges.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
Meters Packets-Per-Second Capable.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	Yes
	ExtremeSwitching 5320, 5420, 5520	N/A
AVB (audio video bridging) —maximum number of active streams.	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, 5320, 5420	1,024
	ExtremeSwitching X465, X670-G2, X695, X870, 5520, X690, X590	4,096
BFD sessions (Software Mode) —maximum number of BFD sessions.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5420, 5520 (default timers—1 sec)	512
	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 (minimal timers—100 msec)	10 ^c
BFD IPv4 sessions (Hardware Assisted) — maximum number of IPv4 BFD sessions.	ExtremeSwitching X460-G2, X870, X690, X590, X465, X695	900 (PTP not enabled) 425 (PTP enabled) 256 (with 3 ms transmit interval)

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
BFD IPv6 sessions (Hardware Assisted) —maximum number of IPv6 BFD sessions.	ExtremeSwitching X460-G2, X870, X690, X590, X465, X695	425 (PTP not enabled)
BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per virtual router.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	8
BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per VLAN.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	8
BOOTP/DHCP relay —maximum number of DHCPv4/v6 relay agents	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	4,000
Connectivity fault management (CFM) —maximum number of CFM domains. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
CFM —maximum number of CFM associations. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	256
CFM —maximum number of CFM up end points. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
CFM —maximum number of CFM down end points. Note: With Advanced Edge license or higher.	ExtremeSwitching X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520 ExtremeSwitching X460-G2	32 256 (non-load shared ports) 32 (load shared ports)
CFM —maximum number of CFM remote end points per up/down end point. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,000

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
CFM —maximum number of dot1ag ports. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	128
CFM —maximum number of CFM segments. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,000
CFM —maximum number of MIPs. Note: With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	256
CLEAR-Flow —total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs.	ExtremeSwitching X460-G2, X670-G2, X450-G2	4,094
	ExtremeSwitching X440-G2, X620	1,024
	ExtremeSwitching X870	3,072
	ExtremeSwitching X690, X590, X465, X695, 5320, 5420	8,192
	ExtremeSwitching 5520	9,215
Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs) —maximum number of DCBX application TLVs.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
DHCPv6 Prefix Delegation Snooping —Maximum number of DHCPv6 prefix delegation snooped entries.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	256 (with underlying protocol RIPng) 128 (with underlying protocol OSPFv3) 1,024 (with static routes)
DHCP snooping entries —maximum number of DHCP snooping entries.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695	2,048
	ExtremeSwitching 5320, 5420, 5520	2,050
Dynamic ACLs —maximum number of ACLs processed per second. Note: Limits are load-dependent.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	
	with 50 DACLs with 500 DACLs	10 5

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
EAPS domains — maximum number of EAPS domains. Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains. Note: You can increase the number of domains by upgrading to the Advanced Edge license.	ExtremeSwitching X670-G2, X450-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695	4
	ExtremeSwitching 5320-24T/P, 5320-16P	32
	ExtremeSwitching 5320-48T/P, 5420, 5520	64
EAPSV1 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, 5320-24T/P, 5320-16P	1,000
	ExtremeSwitching X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	2,000
ERPS domains — maximum number of ERPS domains with or without CFM configured. Note: You can increase the number of domains by upgrading to the Advanced Edge license.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	4
	ExtremeSwitching 5320, 5420, 5520	See Advanced Edge and Base License Limits on page 72
ERPSv1 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	2,000
	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, 5320-24T/P, 5320-16P	1,000
ERPSv2 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	2,000
	ExtremeSwitching X620, X440-G2, 5320-24T/P, 5320-16P	500
ELSM (vlan-ports) — maximum number of VLAN ports.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	5,000
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	4,000

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Extended Edge Switching maximum BPEs —maximum number of attached bridge port extenders (BPEs).	ExtremeSwitching X465, X590, X670-G2, X690, 5520	48
	ExtremeSwitching 5420	20
Extended Edge Switching maximum cascade ports —maximum number of upstream ports on bridge port extenders (BPEs).	ExtremeSwitching X465, X590, X670-G2, X690, 5420, 5520	2 on V400-24 and V300 models 4 on V400-48 models
Extended Edge Switching maximum tiers —maximum number of cascade levels (tiers) of bridge port extenders (BPEs).	ExtremeSwitching X465, X590, X670-G2, X690, 5420, 5520	4 (except for V300-8P-2T-W, which support 1 tier)
Extended Edge Switching maximum ring BPEs — maximum number of bridge port extenders (BPEs) in a ring topology.	ExtremeSwitching X465, X590, X670-G2, X690, 5420, 5520	8
Extended Edge Switching maximum VLANs — maximum number of VLANs - Includes all VLANs	ExtremeSwitching X465, X590, X670-G2, X690, 5520	4,094
	ExtremeSwitching 5420	1,024
Extended Edge Switching VLAN+ port memberships —maximum number of VLAN+ (extended) port memberships.	ExtremeSwitching X465, X590, X670-G2, X690, 5520	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

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Forwarding rate—maximum L3 software forwarding rate.	ExtremeSwitching X870	19,000 pps
	ExtremeSwitching X440-G2	6,460 pps
	ExtremeSwitching X450-G2	16,000 pps
	ExtremeSwitching X465	28,497 pps
	ExtremeSwitching X460-G2	17,000 pps
	ExtremeSwitching X590	18,162 pps
	ExtremeSwitching X620	6,968 pps
	ExtremeSwitching X670-G2	9,714 pps
	ExtremeSwitching X690	17,000 pps
	ExtremeSwitching X695	34,813 pps
	ExtremeSwitching 5320-48P	19,142 pps
	ExtremeSwitching 5420F-48T	21,585 pps
	ExtremeSwitching 5520-24T	18,838 pps
FDB (unicast blackhole entries)—maximum number of unicast blackhole FDB entries.	ExtremeSwitching X460-G2	49,152 ^f
	ExtremeSwitching X670-G2	294,912 ^f
	ExtremeSwitching X450-G2	34,816 ^f
	ExtremeSwitching X620, X440-G2	16,384 ^f
	ExtremeSwitching X870	139,264 ^f
	ExtremeSwitching X690, X590, X465	278,528 ^f
	ExtremeSwitching X695	294,912 ^f
	ExtremeSwitching 5320	32,000
	ExtremeSwitching 5420M	65,536
	ExtremeSwitching 5420F	32,768 ^f
ExtremeSwitching 5520	114,688 ^f	
FDB (multicast blackhole entries)—maximum number of multicast blackhole FDB entries.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	1,024
	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5520	4,096
	ExtremeSwitching 5320	1,000
	ExtremeSwitching 5420	1,024

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
FDB (maximum L2 entries)—maximum number of MAC addresses.	ExtremeSwitching X460-G2	98,300 ⁹
	ExtremeSwitching X670-G2	294,912 ⁹
	ExtremeSwitching X450-G2	68,000 ⁹
	ExtremeSwitching X620, X440-G2	16,384
	ExtremeSwitching X870	139,264 ⁹
	ExtremeSwitching X690, X590, X465, X695	278,528 ⁹
	ExtremeSwitching X695	294,912 ⁹
	ExtremeSwitching 5320	32,000
	ExtremeSwitching 5420M	65,536
	ExtremeSwitching 5420F	32,768 ⁹
FDB (maximum L2 entries)—maximum number of multicast FDB entries.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5520	4,096
	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, 5320, 5420	1,024
Identity management—maximum number of Blacklist entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	512
Identity management—maximum number of Whitelist entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	512
Identity management—maximum number of roles that can be created.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64
Identity management—maximum role hierarchy depth allowed.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	5
Identity management—maximum number of attribute value pairs in a role match criteria.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	16
Identity management—maximum number of child roles for a role.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Identity management —maximum number of policies/dynamic ACLs that can be configured per role.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
Identity management —maximum number of LDAP servers that can be configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
Identity management —maximum number of Kerberos servers that can be configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20
Identity management —maximum database memory size.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	512
Identity management —recommended number of identities per switch. Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	100
Identity management —recommended number of ACL entries per identity. Note: Number of ACLs per identity, based on system ACL limitation.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20
Identity management —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	500

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
IGMP snooping per VLAN filters —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	ExtremeSwitching X460-G2, X870	1,500
	ExtremeSwitching X450-G2	2,048
	ExtremeSwitching X670-G2 , X695	2,000
	ExtremeSwitching X620, X440-G2	1,000
	ExtremeSwitching X690, X590, X465	4,000
	ExtremeSwitching 5320, 5420	1,500
	ExtremeSwitching 5520	2,500
IGMPv1/v2 SSM-map entries —maximum number of IGMPv1/v2 SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	500
IGMPv1/v2 SSM-map entries —maximum number of sources per group in IGMPv1/v2 SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	50
IGMPv2 subscriber —maximum number of IGMPv2 subscribers per port. ⁿ	ExtremeSwitching X870, X690, X590, X465, X695 , X670-G2, X460-G2, X450-G2, 5320, 5420, 5520	4,000
	ExtremeSwitching X440-G2, X620	3,500
IGMPv2 subscriber —maximum number of IGMPv2 subscribers per switch. ⁿ	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X460-G2, X450-G2, 5320, 5420, 5520	20,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X465, X870, X690, X590, X695	45,000
IGMPv3 maximum source per group —maximum number of source addresses per group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X770, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	250
IGMPv3 subscriber —maximum number of IGMPv3 subscribers per port. ⁿ	ExtremeSwitching X670-G2, X460-G2, X450-G2, 5320, 5420, 5520	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690, X590, X465, X695	4,000
IGMPv3 subscriber —maximum number of IGMPv3 subscribers per switch. ⁿ	ExtremeSwitching X460-G2, X450-G2, 5320, 5420, 5520	20,000
	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X870, X690, X590, X465, X695	45,000

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
IP ARP entries in software —maximum number of IP ARP entries in software. Note: Might be limited by hardware capacity of FDB (maximum L2 entries).	ExtremeSwitching X670-G2	131,072 (up to) ^h
	ExtremeSwitching X460-G2	57,344 (up to) ^h
	ExtremeSwitching X450-G2	47,000 (up to) ^h
	ExtremeSwitching X440-G2, X620	20,480
	ExtremeSwitching X870	94,206 (up to) ^h
	ExtremeSwitching X690, X590, X465	157,694 (up to) ^h
	ExtremeSwitching X695	184,318 (up to) ^h
	ExtremeSwitching 5320, 5420, 5520	74,750 (up to) ^h
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.	ExtremeSwitching X870	74,000 (up to) ^h
	ExtremeSwitching X460-G2	50,000 (up to) ^h
	ExtremeSwitching X670-G2	108,000 (up to) ^h
	ExtremeSwitching X450-G2	39,000 (up to) ^h
	ExtremeSwitching X620	1,500
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X690, X590, X465	119,000 (up to) ^h
	ExtremeSwitching X695	146,000 (up to) ^h
	ExtremeSwitching 5320	16,000
	ExtremeSwitching 5420M models ExtremeSwitching 5420F models	21,000 12,000
ExtremeSwitching 5520	60,000 ^h	
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.”	ExtremeSwitching X870	64,000 (up to) ^h
	ExtremeSwitching X460-G2	43,000 (up to) ^h
	ExtremeSwitching X670-G2	98,000 (up to) ^h
	ExtremeSwitching X450-G2	29,000 (up to) ^h
	ExtremeSwitching X620	1,500
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X690, X590, X465	109,000 (up to) ^h
	ExtremeSwitching X695	125,000 (up to) ^h
	ExtremeSwitching 5320	14,000
	ExtremeSwitching 5420M models ExtremeSwitching 5420F models	24,000 16,000
ExtremeSwitching 5520	49,000 ^h	

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
IP flow information export (IPFIX)—number of simultaneous flows.	ExtremeSwitching X460-G2	2,048 ingress 2,048 egress
	ExtremeSwitching X450-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	N/A
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.	ExtremeSwitching X870	120,000 (up to) ^h
	ExtremeSwitching X460-G2	73,000 ^h
	ExtremeSwitching X670-G2	176,000 (up to) ^h
	ExtremeSwitching X450-G2	61,000 (up to) ^h
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X690, X590, X465	216,000 (up to) ^h
	ExtremeSwitching X695	241,000 (up to) ^h
	ExtremeSwitching 5320	20,000
	ExtremeSwitching 5320-24T/P, 5320-16P	24,000
	ExtremeSwitching 5420M ExtremeSwitching 5420F	36,000 24,000 ^h
ExtremeSwitching 5520	102,000 ^h	
IPv4 routes—maximum number of IPv4 routes in software (combination of unicast and multicast routes), including static and from all routing protocols.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	25,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	131,000
	ExtremeSwitching 5320, 5420, 5520	81,000
IPv4 routes (LPM entries in hardware)— number of IPv4 routes in hardware.	ExtremeSwitching X460-G2, 5420	12,000
	ExtremeSwitching X450-G2	16,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	131,000 ^q
	ExtremeSwitching X620, X440-G2	480
	ExtremeSwitching 5520	81,000 ^q
IPv6 6in4 tunnel— maximum number of IPv6 6in4 tunnels.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
	ExtremeSwitching X440-G2, X620	N/A
IPv6 6to4 tunnel— maximum number of IPv6 6to4 tunnels.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1 (per virtual router)
	ExtremeSwitching X440-G2, X620	N/A

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
IPv6 addresses on an interface —maximum number of IPv6 addresses on an interface.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
IPv6 addresses on a switch —maximum number of IPv6 addresses on a switch.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048
	ExtremeSwitching X620, X440-G2	510
IPv6 host entries in hardware —maximum number of IPv6 neighbor entries in hardware.	ExtremeSwitching X670-G2	36,750 ^h
	ExtremeSwitching X460-G2, X870	22,000 ^h
	ExtremeSwitching X450-G2	12,000 ^h
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X620	1,500
	ExtremeSwitching X690, X590, X465	24,500 ^s
	ExtremeSwitching 5320	6,000
	ExtremeSwitching 5420M models ExtremeSwitching 5420F models	12,000 6,000
	ExtremeSwitching 5520 ExtremeSwitching X695	18,000 ^s 57,000 ^h
IPv6 routes in software —maximum number of IPv6 routes in software, including static routes and routes from all routing protocols.	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2	25,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	65,000 ^q
	ExtremeSwitching 5320, 5420, 5520	18,000 ^q
IPv6 routes (LPM entries in hardware) —maximum number of IPv6 routes in hardware.	ExtremeSwitching X460-G2, 5420	6,000
	ExtremeSwitching X450-G2	8,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	65,000 ^q
	ExtremeSwitching X620, X440-G2	240
	ExtremeSwitching 5520	40,000 ^q
IPv6 routes with a mask greater than 64 bits in hardware —maximum number of such IPv6 LPM routes in hardware.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695, 5520	8,192 ^r
	ExtremeSwitching 5320, 5420	256
	ExtremeSwitching X440-G2, X620	1,024
	ExtremeSwitching X450-G2, X460-G2	2,048

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
IPv6 route sharing in hardware —route mask lengths for which ECMP is supported in hardware.	ExtremeSwitching X460-G2, X450-G2, X620, 5320, 5420, 5520	0–64 >64 single path only
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	0–128 ^r
	ExtremeSwitching X440-G2	Not supported
IP router interfaces —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	2,048
	ExtremeSwitching X620, X440-G2	510
	ExtremeSwitching 5320-48T/P	1,533
	ExtremeSwitching 5320-24T/P, 5320-16P	509
	ExtremeSwitching 5420	1,533
ExtremeSwitching 5520	2,048	
IP multicast static routes —maximum number of permanent multicast IP routes.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,024
IP unicast static routes —maximum number of permanent IP unicast routes.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,024
	ExtremeSwitching X620, X440-G2	480
IP route sharing (maximum gateways) —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.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X870, X690, X590, X465, X695	2, 4, 8, 16, 32, or 64
	ExtremeSwitching 5320, 5420, 5520	2, 4, or 8
	ExtremeSwitching X440-G2	N/A

Table 9: Supported Limits for Edge and 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.	ExtremeSwitching X670-G2	
	if maximum gateways is 2	1,022
	if maximum gateways is 4	1,022
	if maximum gateways is 8	1,022
	if maximum gateways is 16 (default)	1,022
	if maximum gateways is 32	510
	if maximum gateways is 64	254
	ExtremeSwitching X460-G2, X450-G2	
	if maximum gateways is 2	1,022
	if maximum gateways is 4	1,022
	if maximum gateways is 8	510
	if maximum gateways is 16 (default)	254
	if maximum gateways is 32	126
	if maximum gateways is 64	62
	ExtremeSwitching X620	
	if maximum gateways is 2	126
	if maximum gateways is 4	126
	if maximum gateways is 8	126
	if maximum gateways is 16 (default)	126
	if maximum gateways is 32	62
if maximum gateways is 64	30	
ExtremeSwitching X690, X590, X465, X695		
if maximum gateways is 2	4,094	
if maximum gateways is 4	4,094	
if maximum gateways is 8	2,046	
if maximum gateways is 16 (default)	1,022	
if maximum gateways is 32	510	
if maximum gateways is 64	254	
Note: 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		

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
	more information about RIOT, see ExtremeXOS 31.7 User Guide .	
	ExtremeSwitching X870 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
	ExtremeSwitching X440-G2	N/A
	ExtremeSwitching 5320	128 (if maximum gateways is 2) 128 (if maximum gateways is 4) 64 (if maximum gateways is 8)
	ExtremeSwitching 5420 Note: 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 ExtremeXOS 31.7 User Guide .	510 (if maximum gateways is 2) 254 (if maximum gateways is 4) 126 (if maximum gateways is 8)
	ExtremeSwitching 5520 Note: 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 ExtremeXOS 31.7 User Guide .	2046 (if maximum gateways is 2) 1022 (if maximum gateways is 4) 510 (if maximum gateways is 8)
IP multinetting (secondary IP addresses) —maximum number of secondary IP addresses per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
Jumbo frames —maximum size supported for jumbo frames, including the CRC.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	9,216

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch —maximum number of VCCV enabled VPLS VPNs.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465	16
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A
L2 VPN: VPLS MAC addresses —maximum number of MAC addresses learned by a switch.	ExtremeSwitching X670-G2, X690, X590, X465	140,000
	ExtremeSwitching X460-G2	55,000
	ExtremeSwitching X870	65,000
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A
L2 VPN: VPLS VPNs —maximum number of VPLS virtual private networks per switch.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465	1,023
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A
L2 VPN: VPLS peers —maximum number of VPLS peers per VPLS instance.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465	64
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A
L2 VPN: LDP pseudowires —maximum number of pseudowires per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465	7,000
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A
L2 VPN: static pseudowires —maximum number of static pseudowires per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465	7,000
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A
L2 VPN: Virtual Private Wire Service (VPWS) VPNs —maximum number of virtual private networks per switch.	ExtremeSwitching X670-G2, X870, X690, X590, X465	4,090
	ExtremeSwitching X460-G2	1,023
	ExtremeSwitching X450-G2, X620, X440-G2, X695, 5320, 5420, 5520	N/A

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Layer-2 IPMC forwarding caches —(IGMP/MLD/PIM snooping) in mac-vlan mode. Note: <ul style="list-style-type: none"> The internal lookup table configuration used is "I2-and-I3". IPv6 and IPv4 L2 IPMC scaling is the same for this mode. Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same. 	ExtremeSwitching X670-G2, X695	73,000
	ExtremeSwitching X460-G2	24,000
	ExtremeSwitching X450-G2	14,000
	ExtremeSwitching X620, X440-G2	5,000
	ExtremeSwitching X870	36,000
	ExtremeSwitching X690, X590, X465	67,000
	ExtremeSwitching 5320	32,000
	ExtremeSwitching 5420	64,000
	ExtremeSwitching 5520	32,768
Layer-3 IPv4 Multicast —maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled). Note: <ul style="list-style-type: none"> Limit value is the same for MVR senders, PIM Snooping entries, PIM SSM cache, IGMP senders, PIM cache. Assumes source-group-vlan mode as look up key. Layer 3 IPMC cache limit in mixed mode also has the same value. 	ExtremeSwitching X460-G2	26,000
	ExtremeSwitching X450-G2	21,000
	ExtremeSwitching X670-G2	77,500
	ExtremeSwitching X620, X440-G2	1,500
	ExtremeSwitching X870	52,000
	ExtremeSwitching X690, X590, X465	93,000
	ExtremeSwitching X695	104,000
	ExtremeSwitching 5320	8,000
	ExtremeSwitching 5420M	12,000
ExtremeSwitching 5420F	6,000	
ExtremeSwitching 5520	43,000	

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
<p>Layer-3 IPv6 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).</p> <p>Note:</p> <ul style="list-style-type: none"> Limit value is the same for MLD sender per switch, PIM IPv6 cache. Assumes source-group-vlan mode as lookup key. 	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X460-G2	14,000
	ExtremeSwitching X450-G2	10,000
	ExtremeSwitching X620, X440-G2	700
	ExtremeSwitching X870	18,000
	ExtremeSwitching X690, X590, X465	48,000
	ExtremeSwitching X695	52,000
	ExtremeSwitching 5320	4,000
	ExtremeSwitching 5420M	6,000
	ExtremeSwitching 5420F	3,000
ExtremeSwitching 5520	21,500	
<p>Load sharing—maximum number of load sharing groups.</p> <p>Note: 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.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	128
<p>Load sharing—maximum number of ports per load-sharing group.</p>	For standalone and stacked: ExtremeSwitching X620, X440-G2, 5320, 5420	8
	For standalone: ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5520	32
	For stacked: ExtremeSwitching X670-G2, X460-G2, X450-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64
<p>Logged messages—maximum number of messages logged locally on the system.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20,000
<p>MAC-based security—maximum number of MAC-based security policies.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,024

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
MAC Locking —Maximum number of MAC locking stations that can be learned on a port.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64 (static MAC locking stations) 600 (first arrival MAC locking stations)
Meters —maximum number of meters supported.	ExtremeSwitching X460-G2, X450-G2, X670-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048
Maximum mirroring instances.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695 Note: Only two or four mirroring instances will be active at a time, depending on the mirroring filter added to it. There are four hardware resource slots. Each single instance uses one such slot, while each ingress plus egress instance uses two slots. You can use a total of four slots, while there are no more than two egress instances. The maximum possible combination for mirroring instances: <ol style="list-style-type: none"> 1. 4 ingress 2. 3 ingress + 1 egress 3. 2 ingress + 2 egress 4. 2 (ingress + egress) 5. 1 (ingress + egress) + 2 ingress 6. 1 (ingress + egress) + 1 egress + 1 ingress 	16 (including default mirroring instance)
	ExtremeSwitching X620, X440-G2 Note: For stacks containing X620 or X440-G2, maximum supported egress mirror instances is 1.	1 (egress)
	ExtremeSwitching 5320, 5420, 5520	4 total, 2 egress
Mirroring (filters) —maximum number of mirroring filters. Note: This is the number of filters across all the active mirroring instances.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	128

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Mirroring, one-to-many (filters) —maximum number of one-to-many mirroring filters. Note: This is the number of filters across all the active mirroring instances.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	128
Mirroring, one-to-many (monitor port) —maximum number of one-to-many monitor ports.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	16
MLAG ports —maximum number of MLAG ports allowed.	ExtremeSwitching X670-G2, X690, X695	71
	ExtremeSwitching X440-G2, X450-G2	51
	ExtremeSwitching X460-G2	53
	ExtremeSwitching X620	15
	ExtremeSwitching X870	127
	ExtremeSwitching X590,	35
	ExtremeSwitching X465, 5320	55
ExtremeSwitching 5420, 5520	59	
MLAG peers —maximum number of MLAG peers allowed.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2
MPLS RSVP-TE interfaces —maximum number of interfaces.	ExtremeSwitching X460-G2, X670-G2, X590, X465,, X695, X870	32
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs.	ExtremeSwitching X460-G2, X670-G2, X870, X590,X690, X695, X465	2,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS RSVP-TE egress LSPs —maximum number of egress LSPs.	ExtremeSwitching X460-G2, X670-G2, X870, X690 X590, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
MPLS RSVP-TE transit LSPs —maximum number of transit LSPs.	ExtremeSwitching X460-G2, X670-G2	2,000
	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS RSVP-TE paths —maximum number of paths.	ExtremeSwitching X460-G2	1,000
	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS RSVP-TE profiles —maximum number of profiles.	ExtremeSwitching X460-G2	1,000
	ExtremeSwitching X670-G2, X870, X690 X590, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS RSVP-TE EROs —maximum number of EROs per path.	ExtremeSwitching X460-G2, X670-G2, X870, X690 X590, X465, X695	64
	ExtremeSwitching X450-G2, and ExtremeSwitching X440-G2, X620, 5420, 5520	N/A
MPLS LDP peers —maximum number of MPLS LDP peers per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465, X695	128
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS LDP adjacencies —maximum number of MPLS LDP adjacencies per switch.	ExtremeSwitching X460-G2	50
	ExtremeSwitching X670-G2, X870, X690 X590, X465, X695	64
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS LDP ingress LSPs —maximum number of MPLS LSPs that can originate from a switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465, X695	2,048
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS LDP-enabled interfaces —maximum number of MPLS LDP configured interfaces per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465, X695	128
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
MPLS LDP transit LSPs —maximum number of MPLS transit LSPs per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS LDP egress LSPs —maximum number of MPLS egress LSPs that can terminate on a switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS static egress LSPs —maximum number of static egress LSPs.	ExtremeSwitching X460-G2	7,116
	ExtremeSwitching X870, X690, X590, X465, X695, X670-G2	8,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS static ingress LSPs —maximum number of static ingress LSPs.	ExtremeSwitching X460-G2, X870, X690 X590, X465, X695	4,000
	ExtremeSwitching X670-G2	2,048
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
MPLS static transit LSPs —maximum number of static transit LSPs	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520	N/A
Multicast listener discovery (MLD) snooping per-VLAN filters —maximum number of VLANs supported in per-VLAN MLD snooping mode.	ExtremeSwitching X460-G2, X670-G2, X870	768
	ExtremeSwitching X450-G2	508
	ExtremeSwitching X620, X440-G2	256
	ExtremeSwitching X690, X590, X465, X695, 5320, 5420	1,500
	ExtremeSwitching 5520	1,000
Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per port. ⁿ	ExtremeSwitching X670-G2, X450-G2, X460-G2	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690, X590, X465, X695, 5320, 5420, 5520	4,000
Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per switch. ⁿ	ExtremeSwitching X460-G2, X450-G2, X620, X440-G2, 5320, 5420, 5520	10,000
	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X870, X690, X590, X465, X695	45,000

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per port. ⁿ	ExtremeSwitching X670-G2, X460-G2, X450-G2, 5320, 5420, 5520	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690, X590, X465, X695	4,000
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per switch. ⁿ	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X460-G2, X450-G2, X620, X440-G2, 5320, 5420, 5520	10,000
	ExtremeSwitching X870, X690, X590, X465, X695	45,000
Multicast listener discovery (MLD)v2 maximum source per group —maximum number of source addresses per group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	200
Multicast listener discovery (MLD) SSM-map entries —maximum number of MLD SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	500
	ExtremeSwitching X440-G2, X620	50
Multicast listener discovery (MLD) SSM-MAP entries —maximum number of sources per group in MLD SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	50
Network Login —maximum number of clients being authenticated on MAC-based VLAN enabled ports.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,024
Network Login —maximum number of clients being authenticated with policy mode enabled with TCI overwrite enabled.	ExtremeSwitching X450-G2, X460-G2, X590, X465, 5320, 5420, 5520	1,024
	ExtremeSwitching X670-G2, X870, X690, X695	512
	ExtremeSwitching X620, X440-G2	256
Network Login —maximum number of dynamic VLANs.	ExtremeSwitching X460-G2, X450-G2, X670-G2, X870, X690, X590, X465, X695	2,000
	ExtremeSwitching X440-G2, X620, 5320, 5420, 5520	1,024

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Network Login VLAN VSAs —maximum number of VLANs a client can be authenticated on at any given time.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	10
Network Service Identifiers (NSI)/VLAN mappings —maximum number of VLANs to NSI mappings.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	94
Network Address Translation (NAT) VLANs —maximum number of NAT VLANs.	ExtremeSwitching X465, X590, X690, X695, X870	4
Network Address Translation (NAT) Sessions —number of NAT sessions supported (non twice-NAT).	ExtremeSwitching X465, X590, X690, X870	1,024
	ExtremeSwitchingX695	1,023
Node Alias —maximum number of entries per slot.	ExtremeSwitching X450-G2, X460-G2, X670-G2 X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8,192
ONEPolicy Dynamic ACL Rules —maximum number of Dynamic ACLs supported via RADIUS VSA 232 per user in Access-List mode.	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64
ONEPolicy Roles/Profiles —maximum number of policy roles/profiles.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	63

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
ONEPolicy Rules per Role/Profile —maximum number of rules per role/policy.	ExtremeSwitching X450-G2, X460-G2	IPv6 rules: 256 IPv4 rules: 256 L2 Rules: 184 MAC Rules: 256
	ExtremeSwitching X670-G2, X870	IPv6 Rules: 256 L2 Rules: 184 MAC Rules: 256 IPv4 Rules: 256
	ExtremeSwitching X620, X440-G2	IPv6 and Mac Rules: 0 Ipv4 Rules: 256 (per switch) L2 Rules: 184 (per switch)
	ExtremeSwitching X465, X690, X590, X695, 5420	IPv4 Rules: 512 IPv6 Rules: 512 MAC Rules: 512 L2 Rules: 440
	ExtremeSwitching 5320	IPv4 Rules: 1,024 IPv6 Rules: 0 MAC Rules: 0 L2 Rules: 952
	ExtremeSwitching 5520	4,024
ONEPolicy Authenticated Users per Switch —maximum number of authenticated users per switch only with TCI-Overwrite enabled.	ExtremeSwitching X450-G2, X460-G2, X590, X465, 5520	1,024
	ExtremeSwitching X670-G2, X690, X870, X695, 5320, 5420	512
	ExtremeSwitching X620, X440-G2	256
	Stacking	Depends on the stack nodes, but the maximum is 65,535.
ONEPolicy Authenticated Users per Switch —maximum number of authenticated users per switch with TCI-Overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching X690, X590, X465	24,576
	ExtremeSwitching X670-G2, X460-G2, X870, X695	12,288
	ExtremeSwitching X450-G2	6,144
	ExtremeSwitching X620, X440-G2	1,536
	Stacking	1,536–65,534
	ExtremeSwitching 5320, 5420	768
	ExtremeSwitching 5520	9,216

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port per switch with TCI overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching X450-G2	6,144
	ExtremeSwitching X460-G2, X670-G2, X870, X695	12,288
	ExtremeSwitching X690, X590, X465	24,576
	ExtremeSwitching X440-G2, X620	1,536
	ExtremeSwitching 5320, 5420	768
	ExtremeSwitching 5520	9,216
ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port with only with TCI-Overwrite enabled.	ExtremeSwitching X450-G2, X460-G2, X590, X465, 5520	1,024
	ExtremeSwitching X670-G2, X870, X690, X695, 5320, 5420	512
	ExtremeSwitching X620, X440-G2	256
ONEPolicy Permit/Deny Traffic Classification Rules Types —total maximum number of unique permit/deny traffic classification rules types (system/stack).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870	952
	ExtremeSwitching X620, X440-G2	440
	ExtremeSwitching X690, X590, X465, X695, 5320, 5420	1,976
	ExtremeSwitching 5520	4,024
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870	256
	ExtremeSwitching X620, X440-G2, 5320	N/A
	ExtremeSwitching X690, X590, X465, X695, 5420	512
	ExtremeSwitching 5520	1,024
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870	256
	ExtremeSwitching X620, X440-G2, 5320	N/A
	ExtremeSwitching X690, X590, X465, X695, 5420	512
	ExtremeSwitching 5520	1,024

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870	256
	ExtremeSwitching X690, X590, X465, X695, 5420	512
	ExtremeSwitching 5320, 5520	1,024
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870	184
	ExtremeSwitching X620, X440-G2	184
	ExtremeSwitching X690, X590, X465, X695, 5420	440
	ExtremeSwitching 5320, 5520	952
Policy-based routing (PBR) redundancy —maximum number of flow-redirects.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	256 ^o
Policy-based routing (PBR) redundancy —maximum number of next hops per each flow-direct.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32 ^o
Private VLANs —maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN.	ExtremeSwitching X670-G2	63
	ExtremeSwitching X460-G2	53
	ExtremeSwitching X450-G2	51
	ExtremeSwitching X440-G2	47
	ExtremeSwitching X620	15
	ExtremeSwitching X870	127
	ExtremeSwitching X690, X695	71
	ExtremeSwitching X590, X465	31
ExtremeSwitching 5320, 5420, 5520	36	

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Private VLANs —maximum number of private VLANs with an IP address on the network VLAN. Note: This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	1,024
	ExtremeSwitching X450-G2	510
	ExtremeSwitching X440-G2	255
	ExtremeSwitching X620	510
	ExtremeSwitching 5320, 5420, 5520	960
Private VLANs —maximum number of private VLANs in an L2-only environment.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	1,280
	ExtremeSwitching X450-G2	597
	ExtremeSwitching X440-G2, X620	255
	ExtremeSwitching 5320, 5420, 5520	960
PTP/1588v2 Clock Ports	ExtremeSwitching X460-G2, X670-G2	31 for boundary clock 1 for ordinary clock
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	N/A
PTP/1588v2 Clock Instances	ExtremeSwitching X670-G2, X460-G2	2 combinations: <ul style="list-style-type: none"> • Transparent clock + ordinary clock • Transparent clock + boundary clock
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	N/A
PTP/1588v2 Unicast Static Slaves	ExtremeSwitching X670-G2, X460-G2	40 entries per clock port
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	N/A
PTP/1588v2 Unicast Static Masters	ExtremeSwitching X670-G2, X460-G2	10 entries per clock type
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695, 5320, 5420, 5520	N/A

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Route policies —suggested maximum number of lines in a route policy file.	ExtremeSwitching X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	10,000
RIP Learned Routes —maximum number of RIP routes supported without aggregation.	ExtremeSwitching X670-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	10,000
RIP interfaces on a single router —recommended maximum number of RIP routed interfaces on a switch.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	256
	ExtremeSwitching X440-G2, X620	128
RIPng learned routes —maximum number of RIPng routes.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	3,000
	ExtremeSwitching X440-G2, X620	N/A
Spanning Tree (maximum STPDs) —maximum number of Spanning Tree Domains on port mode EMISTP.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X620, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	64
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	32
Spanning Tree PVST+ —maximum number of port mode PVST domains. Note: 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, on a 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).	ExtremeSwitching X670-G2, X620	256
	ExtremeSwitching X460-G2, X450-G2, X440-G2, 5320, 5420, 5520	128
	ExtremeSwitching X870, X690, X590, X465, X695	384

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Spanning Tree —maximum number of multiple spanning tree instances (MSTI) domains.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590 , X465, X695, 5320-48T/P, 5420, 5520	64
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	32
Spanning Tree —maximum number of VLANs per MSTI. Note: Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI.	ExtremeSwitching X670-G2	500
	ExtremeSwitching X460-G2, X450-G2, X620, X870, X690, X590 , X465, X695, 5320-48T/P, 5420, 5520	600
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	256
Spanning Tree —maximum number of VLANs on all MSTP instances.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X620, X870, X690, X590 , X465, X695, 5320-48T/P, 5420, 5520	1,024
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	512
Spanning Tree (802.1d domains) —maximum number of 802.1d domains per port.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695, 5320, 5420, 5520	1
Spanning Tree (number of ports) —maximum number of ports including all Spanning Tree domains.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	4,096
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	2,048
Spanning Tree (maximum VLANs) —maximum number of STP-protected VLANs (dot1d and dot1w).	ExtremeSwitching X670-G2, X460-G2, X450-G2, X620, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	1,024
	ExtremeSwitching X440-G2, 5320-24T/P, 5320-16P	600
SSH (number of sessions) —maximum number of simultaneous SSH sessions.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
Static MAC multicast FDB entries —maximum number of permanent multicast MAC entries configured into the FDB.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,024

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
Syslog servers —maximum number of simultaneous Syslog servers that are supported.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	16
Syslog targets —maximum number of configurable Syslog targets.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	16
Telnet (number of sessions) —maximum number of simultaneous Telnet sessions.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
Virtual routers —maximum number of user-created virtual routers that can be created on a switch.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	63
	ExtremeSwitching X440-G2, X620, 5320-24T/P, 5320-16P	16 (local-only VRs)
Virtual router forwarding (VRFs) —maximum number of VRFs that can be created on a switch. Note: * Subject to other system limitations.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	960 *
	ExtremeSwitching X440-G2, X620, 5320-24T/P, 5320-16P	16 (local-only VRFs)
Virtual router protocols per VR —maximum number of routing protocols per VR.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	8
	ExtremeSwitching X440-G2, X620, 5320-24T/P, 5320-16P	N/A
Virtual router protocols per switch —maximum number of VR protocols per switch.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	64
	ExtremeSwitching X440-G2, X620, 5320-24T/P, 5320-16P	N/A
VLAN aggregation —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,000

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
<p>VLANs—includes all VLANs.</p> <p>Note: 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.)</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695, 5320, 5420, 5520	4,094
VLANs (Layer 2) —maximum number of Layer 2 VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695, 5320, 5420, 5520	4,094
VLANs (Layer 3) —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5520	2,048
	ExtremeSwitching 5320-48T/P, 5420	1,533
	ExtremeSwitching X440-G2, X620	510
	ExtremeSwitching 5320-24T/P, 5320-16P	509
VLAN Port Interfaces (VPIF) —maximum number of VLAN port interfaces.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X620	65,536
	ExtremeSwitching 5320	53,248
	ExtremeSwitching 5420	60,000
	ExtremeSwitching X465, X590, X670-G2, X690, X870, X695, 5520	131,585
VLANs (maximum active port-based) —maximum active ports per VLAN when 4,094 VLANs are configured with the default license.	ExtremeSwitching X670-G2, X870, X690, X590 , X465, X695, 5520	32
	ExtremeSwitching 5320, 5420	3
	ExtremeSwitching X440-G2	28
	ExtremeSwitching X460-G2	26
	ExtremeSwitching X620	16
	ExtremeSwitching X450-G2	29
VLANs (maximum active protocol-sensitive filters) —number of simultaneously active protocol filters in the switch.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2. X870, X690, X590 , X465, X695, 5320, 5420, 5520	16

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
VLAN translation —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN.	ExtremeSwitching X670-G2	63
	ExtremeSwitching X460-G2	53
	ExtremeSwitching X450-G2	51
	ExtremeSwitching X620	15
	ExtremeSwitching X440-G2	47
	ExtremeSwitching X870	127
	ExtremeSwitching X690, X695	71
	ExtremeSwitching X590, X465	31
VLAN translation —maximum number of translation VLAN pairs with an IP address on the translation VLAN. Note: 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.	ExtremeSwitching X670-G2, X465, X870, X690, X590, X695	1,024
	ExtremeSwitching X450-G2	512
	ExtremeSwitching X620	510
	ExtremeSwitching X440-G2	255
	ExtremeSwitching 5320, 5420, 5520	960
VLAN translation —maximum number of translation VLAN pairs in an L2-only environment.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695	2,046
	ExtremeSwitching X440-G2, X620	255
	ExtremeSwitching 5320, 5520	960
VMAN CEP —maximum number of CVIDs. Note: With 75% hash table utilization.	ExtremeSwitching X440-G2	1,500
	ExtremeSwitching X450-G2	6,000
	ExtremeSwitching X460-G2, X670-G2, X870	12,000
	ExtremeSwitching X590, X690, X465	24,000
	ExtremeSwitching 5320, 5420	768
	ExtremeSwitching 5520	9,000

Table 9: Supported Limits for Edge and Base License (continued)

Metric	Product	Limit
<p>XML requests—maximum number of XML requests per second.</p> <p>Note: Limits are dependent on load and type of XML request. These values are dynamic ACL data requests.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	10 with 100 DACLs
<p>XNV authentication—maximum number of VMs that can be processed (combination of local and network VMs).</p>	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048
	ExtremeSwitching X450-G2, X440-G2, X620	1,024
<p>XNV database entries—maximum number of VM database entries (combination of local and network VMs).</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	16,000
<p>XNV database entries—maximum number of VPP database entries (combination of local and network VPPs).</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048
<p>XNV dynamic VLAN—Maximum number of dynamic VLANs created (from VPPs /local VMs).</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048
<p>XNV local VPPs—maximum number of XNV local VPPs.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048 ingress 512 egress
<p>XNV policies/dynamic ACLs—maximum number of policies/dynamic ACLs that can be configured per VPP.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8 ingress 4 egress
<p>XNV network VPPs—maximum number of XNV network VPPs.^P</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048 ingress 512 egress

Advanced Edge and Base License Limits

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

Table 10: Supported Limits for Advanced Edge and Base License

Metric	Product	Limit
BGP (peers) —maximum number of BGP peers.	ExtremeSwitching 5320, 5420, 5520	2
BGP auto-peering —maximum number of auto-peering nodes and VTEPs.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695, 5320, 5420, 5520	64
BGP auto-peering attached IPv4 hosts — maximum number of attached IPv4 hosts.	ExtremeSwitching X670-G2	16,000
	ExtremeSwitching X870, X690, X590, X465, X695, 5320, 5420, 5520	64,000
BGP auto-peering attached IPv6 hosts — maximum number of attached IPv6 hosts.	ExtremeSwitching X670-G2	254
	ExtremeSwitching X870, X690, X590, X465, X695, 5320, 5420, 5520	8,000
BGP auto-peering ECMP —maximum number of equal cost multipath for auto-peering. Note: * Subject to the limitation imposed by the number of physical ports on a switch.	ExtremeSwitching X670-G2, ExtremeSwitching X690, X870, X590, X465, X695, 5320, 5420, 5520	16*
	ExtremeSwitching 5320, 5420, 5520	4*
BGP auto-peering maximum IPv4 prefixes with ECMP —Maximum number of IPv4 Network prefixes with ECMP.	ExtremeSwitching X670-G2, ExtremeSwitching X690, X870, X590, X465, X695	64,000
	ExtremeSwitching 5320, 5420, 5520	16,000
BGP auto-peering maximum IPv6 prefixes with ECMP —Maximum number of IPv6 Network prefixes with ECMP.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	8,000
	ExtremeSwitching 5320, 5420, 5520	254
BGP auto-peering MLAG peers —maximum MLAG peers per AutoBGP node.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695, 5320, 5420, 5520	1
BGP auto-peering VRFs —maximum number of VRFs.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695, 5320, 5420, 5520	64
BGP auto-peering EVPN instances —maximum EVPN instances.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695, 5320, 5420, 5520	1,024

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
EAPS domains —maximum number of EAPS domains.	ExtremeSwitching X870, X690, X590, X465, X695	128
Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.	ExtremeSwitching X670-G2, X450-G2, X460-G2, 5320-48T/P, 5420, 5520	64
	ExtremeSwitching X440-G2, X620, 5320-24T/P, 5320-16P	32
EAPsv2 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X440-G2, X620, 5320, 5420, 5520	500
	ExtremeSwitching X870, X690, X590, X465, X695	2,000
ERPS domains —maximum number of ERPS domains without CFM configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
ERPS domains —maximum number of ERPS domains with CFM configured.	ExtremeSwitching X450-G2, X670-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	16
	ExtremeSwitching X460-G2	32
ERPSv1 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	2,000
	ExtremeSwitching X620, X440-G2, 5320-24T/P, 5320-16P	1,000
ERPSv2 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	2,000
	ExtremeSwitching X620, X440-G2, 5320-24T/P, 5320-16P	500
ESRP groups —maximum number of ESRP groups	ExtremeSwitching X450-G2, X460-G2, X670-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
ESRP domains —maximum number of ESRP domains.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64
ESRP L2 VLANs —maximum number of ESRP VLANs without an IP address configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,000
ESRP L3 VLANs —maximum number of ESRP VLANs with an IP address configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320-48T/P, 5420, 5520	511
	ExtremeSwitching 5320-24T/P, 5320-16P	509

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
ESRP (maximum ping tracks) —maximum number of ping tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
ESRP (IP route tracks) —maximum IP route tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
ESRP (VLAN tracks) —maximum number of VLAN tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1
OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	64
	ExtremeSwitching 5320, 5420, 5520	8
	ExtremeSwitching X620	4
	ExtremeSwitching X440-G2	N/A
OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
	ExtremeSwitching X450-G2, X440-G2, X620	4
OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X670-G2, X460-G2, 5520	5,000
	ExtremeSwitching 5320, 5420	4,000
	ExtremeSwitching X450-G2, X440-G2, X620	2,400
OSPFv2 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2, 5520	2,000
	ExtremeSwitching 5320, 5420	1,600
	ExtremeSwitching X450-G2, X440-G2, X620	1,000
OSPFv2 interfaces —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	4

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
OSPFv2 links—maximum number of links in the router LSA.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	400
	ExtremeSwitching 5320, 5420	320
	ExtremeSwitching X450-G2, X620, X440-G2	4
OSPFv2 neighbors—maximum number of supported OSPF adjacencies.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520	4
OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X670-G2, X460-G2, 5520	50
	ExtremeSwitching 5320, 5420	40
	ExtremeSwitching X450-G2, X440-G2, X620	4
OSPFv2 virtual links—maximum number of supported OSPF virtual links.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	32
	ExtremeSwitching 5320, 5420	25
	ExtremeSwitching X450-G2, X440-G2, X620	4
OSPFv3 areas—as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X460-G2, X670-G2, 5520	16
	ExtremeSwitching 5320, 5420	12
	ExtremeSwitching X450-G2, X440-G2, X620	4
OSPFv3 external routes—recommended maximum number of external routes.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	10,000
	ExtremeSwitching 5320, 5420	7,500
	ExtremeSwitching X450-G2, X440-G2, X620	1,200
OSPFv3 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2, 5520	3,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5320, 5420	500

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
OSPFv3 interfaces —maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X440-G2, X620, X590, X465, X695, 5320, 5420, 5520	4
OSPFv3 neighbors —maximum number of OSPFv3 neighbors.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X440-G2, X620, X590, X465, X695, 5320, 5420, 5520	4
OSPFv3 virtual links —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	16
	ExtremeSwitching 5320, 5420	12
	ExtremeSwitching X450-G2, X440-G2, X620	4
PIM IPv4 (maximum interfaces) —maximum number of PIM active interfaces.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X440-G2, X620, X690, X590, X465, X695	4
PIM IPv4 Limits —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	180
PIM IPv4 Limits —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	3,000 (depends on policy file limits)
PIM IPv4 Limits —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	5,000
	ExtremeSwitching X440-G2, X620	1,500
PIM IPv4 Limits —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	145
PIM IPv4 Limits —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X440-G2, X620, X690, X590, X465, X695	4
PIM IPv6 Limits —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,750
	ExtremeSwitching X450-G2	1,500
	ExtremeSwitching X440-G2, X620	550

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	70
PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	3,000 (depends on policy file limits)
PIM IPv6 Limits —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64
PIM IPv6 Limits —maximum number of secondary addresses per interface.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	70
PIM IPv6 Limits —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
Port-specific VLAN tags —maximum number of port-specific VLAN tags.	ExtremeSwitching X460-G2, X670-G2, X770, X870, X690, X590, X465	1,023
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520, X695	N/A
Port-specific VLAN tags —maximum number of port-specific VLAN tag ports.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465	4,000
	ExtremeSwitching X450-G2, X440-G2, X620, 5420, 5520, X695	N/A
VLAN Port Interfaces (VPIF) —maximum number of VLAN port interfaces.	ExtremeSwitching X460-G2	65,536
	ExtremeSwitching 5320, 5420	60,000
	ExtremeSwitching X465, X590, X670-G2, X690, X870, X695, 5520	131,585
VRRP (v2/v3-IPv4) (maximum instances) —maximum number of VRRP instances for a single switch, with Advanced Edge license or higher. Note: These limits are applicable for Fabric Routing configuration also. Note: Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type.	Normal Mode (as individual VRs):	
	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	511
	ExtremeSwitching X440-G2, X620	128
	Scaled Mode (with groups):	
	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2,048
	ExtremeSwitching X440-G2, X620	128
	Sliced Mode: ExtremeSwitching 5320, 5420, 5520	511

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
VRRP (v3-IPv6) (maximum instances) —maximum number of VRRP instances for a single switch, with Advanced Edge or Base license, or higher. (VRRP-VRRPv3-IPv6) Note: These limits are applicable for Fabric Routing configuration also. Note: Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type.	Normal Mode (as individual VRs): ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520 ExtremeSwitching X440-G2, X620	511 128
	Scaled Mode (with groups): ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520 ExtremeSwitching X440-G2, X620	2,048 128
VRRP (v2/v3-IPv4/IPv6) (maximum VRID) —maximum number of unique VRID numbers per switch.	ExtremeSwitching X670-G2, X460-G2, X450-G2 X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520 Note: With Advanced Edge license or higher.	255
VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN) —maximum number of VRIDs per VLAN.	ExtremeSwitching X670-G2, X460-G2, X450-G2 X440-G2, X620, X870, X690, X590, X465, X695, 5320, 5420, 5520 Note: With Advanced Edge license or higher.	255
VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks) —maximum number of ping tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520 Note: With Advanced Edge license or higher.	8
VRRP (maximum ping tracks) —maximum number of ping tracks per VRRP Instance under 128 VRRP instances, with Advanced Edge license or higher.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8 (20 centisecond or 1 second hello interval)
VRRP (v3-IPv6) (maximum ping tracks) —maximum number of ping tracks per VRRP Instance under 128 VRRP instances, with Advanced Edge license or higher.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8 (20 centisecond or 1 second hello interval)

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks) —maximum number of IP route tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
VRRP (v2/v3-IPv4/IPv6) —maximum number of VLAN tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
VXLAN —maximum virtual networks.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5520	2,048–4,000
Note: Every VPLS instance/PSTag VLAN reduces this limit by 1.	ExtremeSwitching 5320, 5420	200-375
Note: 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.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	N/A
VXLAN —maximum tenant VLANs plus port combinations	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5520	4,096
Note: Every (VPLS/PSTag VLAN) + port reduces the limit by 1.	ExtremeSwitching 5320, 5420	200-375
	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	N/A
VXLAN —maximum static MAC to IP bindings.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64,000
Note: Every FDB entry configured reduces this limit by 1.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	N/A
VXLAN —maximum RTEP IP addresses	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	512
	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	N/A

Table 10: Supported Limits for Advanced Edge and Base License (continued)

Metric	Product	Limit
VXLAN—maximum virtual networks with dynamic learning and OSPF extensions for VXLAN	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5520	4,000
	ExtremeSwitching 5320, 5420	375
	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	N/A
VXLAN—or replicator role, maximum number of attached leafs per switch.	ExtremeSwitching X465, X590, X670-G2, X690, X695, X870, 5320, 5420, 5520	256

Core and Premier License Limits

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

Table 11: Supported Limits for Core and Premier License

Metric	Product	Limit
Anycast RP Using PIM —maximum number of IPv4 Anycast RP set per VR.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X670-G2, X620, X690, X870, X590, X465, X695, 5320, 5420, 5520	32
Anycast RP Using PIM —maximum number of IPv6 Anycast RP set per VR.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X670-G2, X620, X690, X870, X590, X465, X695, 5320, 5420, 5520	32
Anycast RP Using PIM —RP peers per Anycast RP set.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X670-G2, X620, X690, X870, X590, X465, X695, 5320, 5420, 5520	10
BGP (aggregates) —maximum number of BGP aggregates.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	256
	ExtremeSwitching X450-G2, 5320, 5420	204
BGP (networks) —maximum number of BGP networks.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	1,024
	ExtremeSwitching X450-G2, 5320, 5420	820
BGP (peers) —maximum number of BGP peers. Note: With default keepalive and hold timers. Note: Each BGPv4/BGPv6 peer handles a maximum of 50 routes. Note: ECMP should not be enabled for BGP.	ExtremeSwitching X460-G2, X670-G2, X870, 5520	128
	ExtremeSwitching , X590, X465, X695	300
	ExtremeSwitching X450-G2, 5320, 5420	100
	ExtremeSwitching X690	500

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
BGP (peer groups) —maximum number of BGP peer groups.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	64
	ExtremeSwitching X450-G2, 5320, 5420	50
BGP (policy entries) —maximum number of BGP policy entries per route policy.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	256
	ExtremeSwitching X450-G2, 5320, 5420	204
BGP (policy statements) —maximum number of BGP policy statements per route policy.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	1,024
	ExtremeSwitching X450-G2, 5320, 5420	820
BGP multicast address-family routes —maximum number of multicast address-family routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	25,000
	ExtremeSwitching X450-G2, 5320, 5420	20,000
BGP (unicast address-family routes) —maximum number of unicast address-family routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520 (at default)	25,000
	ExtremeSwitching X870, X690, X590, X465 (with ALPM enabled)	100,000
	ExtremeSwitching X450-G2	20,000
	ExtremeSwitching 5320, 5420	20,000
	ExtremeSwitching 5520 (with ALPM enabled)	80,000
BGP (non-unique routes) —maximum number of non-unique BGP routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	25,000
	ExtremeSwitching X450-G2, 5320, 5420	20,000
BGP ECMP —maximum number of equal cost paths per multipath for BGP and BGPv6.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	2, 4, 8, 16, 32, or 64
	ExtremeSwitching X450-G2	64
	ExtremeSwitching 5320, 5420, 5520	8
BGPv6 (unicast address-family routes) —maximum number of unicast address family routes.	ExtremeSwitching X460-G2, 5320, 5420, 5520	6,000
	ExtremeSwitching X670-G2	8,000
	ExtremeSwitching X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X870, X690 (with ALPM enabled)	100,000
	ExtremeSwitching X450-G2, 5320, 5420	4,800
	ExtremeSwitching 5520 (with ALPM enabled)	40,000

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
BGPv6 (non-unique routes) —maximum number of non-unique BGP routes.	ExtremeSwitching X460-G2, 5520	18,000
	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	24,000
	ExtremeSwitching X450-G2, 5320, 5420	14,000
EVPN EVI instances —maximum number of EVI instances.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	1,024
EVPN LAGs —maximum number of LAGs.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	128
GRE Tunnels —maximum number of GRE tunnels.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
	ExtremeSwitching X620, X440G2	N/A
IS-IS adjacencies —maximum number of supported IS-IS adjacencies.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	128
	ExtremeSwitching X450-G2	N/A
IS-IS ECMP —maximum number of equal cost paths per multipath for IS-IS.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	2, 4, or 8
	ExtremeSwitching X450-G2	N/A
IS-IS interfaces —maximum number of interfaces that can support IS-IS.	ExtremeSwitching X460-G2, X670-G2, X770, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
	ExtremeSwitching X450-G2	N/A
IS-IS routers in an area —recommended maximum number of IS-IS routers in an area.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	256
	ExtremeSwitching X450-G2	N/A
IS-IS route origination —recommended maximum number of routes that can be originated by an IS-IS node.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4 L1 routes in an L1 router —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	25,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4 L2 routes —recommended maximum number of IS-IS Level 2 routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	25,000
	ExtremeSwitching X450-G2	N/A

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
IS-IS IPv4 L1 routes in an L1/L2 router —recommended maximum number of IS-IS Level 1 routes in an L1/L2 IS-IS router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv6 L1 routes in an L1 router —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	10,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv6 L2 routes —recommended maximum number of IS-IS Level 2 routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	10,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv6 L1 routes in an L1/L2 router —recommended maximum number of IS-IS Level 1 routes in a L1/L2 router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	10,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4/IPv6 L1 routes in an L1 router —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.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4/IPv6 L2 routes in an L2 router —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.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4/IPv6 L1 routes in an L1/L2 router —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.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	20,000
	ExtremeSwitching X450-G2	N/A
MPLS RSVP-TE interfaces —maximum number of interfaces.	ExtremeSwitching 5520	32
MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs.	ExtremeSwitching 5520	2000

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
MPLS RSVP-TE egress LSPs —maximum number of egress LSPs.	ExtremeSwitching 5520	2000
MPLS RSVP-TE transit LSPs —maximum number of transit LSPs.	ExtremeSwitching 5520	4000
MPLS RSVP-TE paths —maximum number of paths.	ExtremeSwitching 5520	1000
MPLS RSVP-TE profiles —maximum number of profiles.	ExtremeSwitching 5520	1000
MPLS RSVP-TE EROs —maximum number of EROs per path.	ExtremeSwitching 5520	64
MPLS LDP peers —maximum number of MPLS LDP peers per switch.	ExtremeSwitching 5520	128
MPLS LDP adjacencies —maximum number of MPLS LDP adjacencies per switch.	ExtremeSwitching 5520	64
MPLS LDP ingress LSPs —maximum number of MPLS LSPs that can originate from a switch.	ExtremeSwitching 5520	2048
MPLS LDP-enabled interfaces —maximum number of MPLS LDP configured interfaces per switch.	ExtremeSwitching 5520	128
MPLS LDP transit LSPs —maximum number of MPLS transit LSPs per switch.	ExtremeSwitching 5520	4000
MPLS LDP egress LSPs —maximum number of MPLS egress LSPs that can terminate on a switch.	ExtremeSwitching 5520	4000
MPLS static egress LSPs —maximum number of static egress LSPs.	ExtremeSwitching 5520	4000
MPLS static ingress LSPs —maximum number of static ingress LSPs.	ExtremeSwitching 5520	4000
MPLS static transit LSPs —maximum number of static transit LSPs	ExtremeSwitching 5520	4000
MSDP active peers —maximum number of active MSDP peers.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
MSDP SA cache entries —maximum number of entries in SA cache.	ExtremeSwitching X670-G2, X690, X590, X465, X695, 5520	14,000
	ExtremeSwitching X450-G2, 5420M	8,000
	ExtremeSwitching 5320, 5420F	6,000
	ExtremeSwitching X460-G2	10,000
	ExtremeSwitching X870	11,000
MSDP maximum mesh groups —maximum number of MSDP mesh groups.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	16
OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	64
	ExtremeSwitching 5320, 5420, 5520	8
OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	8
OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X670-G2, X460-G2, 5520	5,000
	ExtremeSwitching X450-G2, 5320, 5420	4,000
OSPFv2 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2, 5520	2,000
	ExtremeSwitching X450-G2, 5320, 5420	1,600
OSPFv2 interfaces —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	400
	ExtremeSwitching X450-G2, , 5320, 5420	320
OSPFv2 links —maximum number of links in the router LSA.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	400
	ExtremeSwitching X450-G2, 5320, 5420	320
OSPFv2 neighbors —maximum number of supported OSPF adjacencies.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	128
	ExtremeSwitching X450-G2, 5320, 5420	96

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
OSPFv2 routers in a single area —recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X670-G2, X460-G2, 5520	50
	ExtremeSwitching X450-G2, 5320, 5420	40
OSPFv2 virtual links —maximum number of supported OSPF virtual links.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5520	32
	ExtremeSwitching X450-G2, 5320, 5420	25
OSPFv3 areas —as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X460-G2, X670-G2, 5520	16
	ExtremeSwitching X450-G2, 5320, 5420	12
OSPFv3 external routes —recommended maximum number of external routes.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	10,000
	ExtremeSwitching X450-G2, 5320, 5420	7,500
OSPFv3 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2, 5520	3,000
	ExtremeSwitching X450-G2, 5320, 5420	500
OSPFv3 interfaces —maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	256
	ExtremeSwitching X450-G2, 5320, 5420	192
OSPFv3 neighbors —maximum number of OSPFv3 neighbors.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	64
	ExtremeSwitching X450-G2, 5320, 5420	48
OSPFv3 virtual links —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695, 5520	16
	ExtremeSwitching X450-G2, 5320, 5420	12
PIM IPv4 (maximum interfaces) —maximum number of PIM active interfaces.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
PIM IPv4 Limits —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	180

Table 11: Supported Limits for Core and Premier License (continued)

Metric	Product	Limit
PIM IPv4 Limits —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	3,000 (depends on policy file limits)
PIM IPv4 Limits —maximum number of multicast sources per group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	5,000
PIM IPv4 Limits —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	145
PIM IPv4 Limits —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32
PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	255
PIM IPv6 Limits —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520 ExtremeSwitching X450-G2,	1,750 1,500
PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	70
PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	3,000 (depends on policy file limits)
PIM IPv6 Limits —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	64
PIM IPv6 Limits —maximum number of secondary addresses per interface.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	70
PIM IPv6 Limits —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695, 5320, 5420, 5520	32

Notes for Limits Tables

-
- ^a 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.
 - ^c When there are BFD sessions with minimal timer, sessions with default timer should not be used.
 - ^f Effective capacity varies based on actual MAC addresses and VLAN IDs used and hash algorithm selected.
 - ^g Based on "configure forwarding internal-tables more l2".
 - ^h Based on "configure forwarding internal-tables more l3-and-ipmc".
 - ^j The limit depends on setting configured with configure iproute reserved-entries.
 - ^m 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.
 - ⁿ If IGMP and MLD are simultaneously configured on the switch, the number of effective subscribers supported are lessened accordingly.
 - ^o The total of all PBR next hops on all flow redirects should not exceed 4,096.
 - ^p The number of XNV authentications supported based on system ACL limitations.
 - ^q Based on "configure forwarding internal-tables more routes".
 - ^r Based on configure forwarding internal-tables more routes ipv6-mask-length 128.
 - ^s Based on configure forwarding internal-tables more l3-and-ipmc or configure forwarding internal-tables l2-and-l3.



Open Issues, Known Behaviors, and Resolved Issues

[Open Issues](#) on page 89

[Known Behaviors](#) on page 89

[Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-21](#) on page 90

[Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-8](#) on page 91

[Resolved Issues in ExtremeXOS and Switch Engine 31.7.2](#) on page 92

[Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-98](#) on page 94

[Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-77](#) on page 95

[Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-56](#) on page 96

[Resolved Issues in ExtremeXOS and Switch Engine 31.7-Patch1-36](#) on page 97

[Resolved Issues in ExtremeXOS and Switch Engine 31.7-Patch1-17](#) on page 98

[Resolved Issues in ExtremeXOS and Switch Engine 31.7](#) on page 99

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

Open Issues

There are no open issues for supported features found in ExtremeXOS 31.7.

Known Behaviors

The following are limitations in ExtremeXOS and Switch Engine system architecture that have yet to be resolved.

Table 12: Known Issues, Platform-Specific, and Feature Change Requests (CRs)

Defect Number	Description
General	
EXOS-30441	For 25G ports, auto-negotiation is disabled by default in ExtremeXOS. When connecting an EXOS switch to a VOSS switch via a 25G Direct Attached Cable, auto-negotiation is mismatched, as the default behavior in VOSS is "enabled". Workaround: Enable auto-negotiation on the ExtremeXOS port.

Table 12: Known Issues, Platform-Specific, and Feature Change Requests (CRs) (continued)

Defect Number	Description
EXOS-31301	In an ExtremeSwitching 5320 stack, switches are unable to connect to standby slots using bluetooth.
EXOS-31548	On native 25G ports, Forward Error Correction is turned ON by default. However, while using QSFP28 ports partitioned for 4x25G operation, Forward Error Correction is turned OFF by default. Workaround: Enable forward-error-correction on the 4x25G ports.
ExtremeSwitching X435 Series Switches	
EXOS-32968	On the ExtremeSwitching X435 series switch, if Fast PoE is enabled and the switch is rebooted (not power-cycled), the switch behaves like perpetual PoE (PoE power delivery on the ports are not interrupted during the reboot).
ExtremeSwitching 5320 Series Switches	
EXOS-31548	When PRD-5320-10G-8P is applied to the ExtremeSwitching 5320 Series switch, the DEF-EVAL-10G-4P is not removed, despite the persistent 10G Port Evaluation Days Remain warning. Workaround: The warning can be disregarded.
EXOS-32841	The following PoE - 54V DC output error log messages are displayed after a full power cycle on PoE capable switches: <pre>11/03/2022 13:03:20.03 <Error:HAL.PoE.Error> (summitPoeRecoveryCheck) pse_system_power_query failed. 11/03/2022 13:03:09.99 <Info:HAL.Sys.Info> (halPSDetectionProcessing) Internal Power Supply is disconnected. 11/03/2022 13:03:09.99 <Info:HAL.Sys.Info> (summitPerPsuStatusToHalState) PSU 54V DC output changed.</pre> <p>Note: These messages do not occur during a normal switch reboot, but on a full power cycle only. This is non-impacting to switch or network functions.</p>
Extended Edge Switching	
EXOS-29969	A hal process failure occurs while running the configure access-list command on ExtremeSwitching 5520 and X590 VPEX stack platforms.

Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-21

The following issues were resolved in ExtremeXOS 31.7.2-Patch1-21. Version 31.7.2-Patch1-21 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2,

30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific version.

Version 31.7 also includes fixes for issues found in Switch Engine 31.6. Version 31.6 was the first version of Switch Engine.

Table 13: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-21

Defect Number	Description
General	
CFD-9530	CLI paging does not work for the alias command.
CFD-9545	PIM router stops sending traffic over an ISC port after receiving leave.
CFD-9563	SNMPmaster signal 11 crash observed after switch restart.
EXOS-34046	MVRP not correctly applying VLANs to ports with MLAG.
EXOS-34282	The last port of a VLAN cannot be deleted using SNMP.
ExtremeSwitching X440-G2 Series Switches	
EXOS-34149	CPU consumption is high when sending multicast packets in an ExtremeSwitching X440-G2 stack.
ExtremeSwitching X870 Series Switches	
EXOS-33685	The ExtremeSwitching X870 should not allow 3 times port partition.
SummitStack	
EXOS-34004	The SNMP trap source IP address configured using SNMP set requests is not saved to the stack backup and is lost if the stack primary is restarted.
EXOS-34082	Error observed when enabling MACsec on the primary node of an ExtremeSwitching X465-48p stack.
EXOS-34292	Default configuration for non-primary slots are shown under normal configuration.
Extended Edge Switching	
EXOS-34263	MLAG can be enabled on a cascade port in a VPEX+Stacking environment.

Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-8

The following issues were resolved in ExtremeXOS 31.7.2-Patch1-8. Version 31.7.2-Patch1-8 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific version.

Version 31.7 also includes fixes for issues found in Switch Engine 31.6. Version 31.6 was the first version of Switch Engine.

Table 14: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-8

Defect Number	Description
General	
EXOS-33443	End client is accessible even though it fails netlogin authentication.
EXOS-33881	IP-MIB shows IP Address in reverse order.
EXOS-33885	Enabling VRRP Fabric Routing should not be allowed on a VRRP group when a group member has priority 255.
EXOS-33907	HAL process crash occurs after flapping BFD session.
EXOS-33942	The stacking link status and stacking link speeds are not correct when polled using OIDs 1.3.6.1.2.1.2.2.1 and 1.3.6.1.2.1.31.1.1.
EXOS-33977	10203 FORMERCAOE optics flapping after changing link speed to 10G in ExtremeSwitching X695 switch.
EXOS-34003	The default FEC configuration is missing for a few ports.
ExtremeSwitching X435 Series Switches	
EXOS-33916	Process <code>jitterentropy-rngd</code> causing high CPU in ExtremeSwitching X435 switch.

Resolved Issues in ExtremeXOS and Switch Engine 31.7.2

The following issues were resolved in ExtremeXOS 31.7.2. Release 31.7.2 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 15: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2

Defect Number	Description
General	
EXOS-32692	DHCP continuously occurs when lease-time is infinite.
EXOS-32719	During the execution of the <code>show access-list counter</code> command in a stack, a Hal process crash occurs.
EXOS-33105	The output of the command <code>show port 63 transceiver</code> is delayed by few seconds.

Table 15: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2 (continued)

Defect Number	Description
EXOS-33308	Last successful login time is not same as system time.
EXOS-33325	OA HEX Value Appended to the end of extremeLastChangeConfigTime OID.
EXOS-33439	The operating system sends a double authentication request for the same client on an LLDP-enabled port
EXOS-33460	Stack not sending extremeStackMemberOverheat trap for individual members.
EXOS-33471	IP security crash occurs on the MLAG peer while a DHCP ACK packet with option 61 is checkpointed.
EXOS-33478	Local authentication failover doesn't work when using Chalet.
EXOS-33509	Turning autopolarity off might not take effect on a port running at 10Mbps or 100Mbps.
EXOS-33517	The show fdb stats command doesn't show display strings for the LAG master port.
EXOS-33556	The show forward-error-correction command output is slow when displaying the information for ports that are not present.
EXOS-33564	PoE show outputs Missing in Show Tech when the switch is loaded with a default configuration.
EXOS-33606	The PIM cache entry is not cleared when anycast RP is configured.
EXOS-33679	A multicast cache entry times out despite continuous traffic to the destination multicast IP.
ExtremeSwitching X440-G2 Series Switches	
EXOS-33173	On an ExtremeSwitching 440-G2-24X/48X switch, Finisar 1000BASE-T optic does not link-up when configured for 100 Mbps with Auto-Negotiation disabled and speed set to 100 Mbps.
ExtremeSwitching X465 Series Switches	
EXOS-33281	Half duplex not working with speed 100 auto off in the ExtremeSwitching X465 switch.
ExtremeSwitching X620 Series Switches	
EXOS-31733	Failed to get phy temperature sensors for sloterror displays in the ExtremeSwitching X620 switch.
ExtremeSwitching X695 Series Switches	
EXOS-33549	IGMP joins are forwarded with an extra tag by the ExtremeSwitching X695 switch when the port is part of both a VMAN and a VLAN.
SummitStack	
EXOS-33289	Node failure occurs in an 8-node ExtremeSwitching 5420 series stack during upgrade.

Table 15: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2 (continued)

Defect Number	Description
Extended Edge Switching	
EXOS-33609	Random BPE slots rebooting with a CSP SR Wait Timer expired for BPE message.

Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-98

The following issues were resolved in ExtremeXOS 31.7.1-Patch1-98. Release 31.7.1-Patch1-98 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.1-Patch1-98

Defect Number	Description
General	
EXOS-26927	During TFTP get operation, if the local-file name is mentioned as just `dot`, as in ".", then the permissions for home directory are changed.
EXOS-31551	Traffic loss after VPWS instance is removed from a port.
EXOS-32268	REST API query times out if there are unreadable characters in the optic-info.
EXOS-32435	IdMgr process crashed with signal 11 on reception of invalid UDP packet length.
EXOS-33014	Switch unresponsive after upgrading from 30.7.1 Patch1-103 to 31.7.1 Patch1-36 with ONEPolicy configuration.
EXOS-33015	Transceiver RxPower values are displayed incorrectly in switch logs.
EXOS-33016	PIM router stops the stream after IGMP leaves on another router despite there being an active subscriber on the port.
EXOS-33030	100G to 25G Amphenol Break-out cables are displayed as unsupported.
EXOS-33108	If SSH2 is disabled when the SSH key is invalid, the switch hangs and cannot be recovered until a hard reboot.
EXOS-33188	Extended view should be used by Switch Engine once it learns more than 10K IPARP entries.
EXOS-33208	Valid LLDP packet gets processed as an STP packet.

Table 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.1-Patch1-98 (continued)

Defect Number	Description
Extended Edge Switching	
EXOS-32532	Random BPE slots rebooting with the message "CSP SR Wait Timer expired for BPE."
EXOS-33140	VPEX Controlling Bridge reboots due to Memory Depletion.
ExtremeSwitching X435 Series Switches	
EXOS-32881	On the ExtremeSwitching X435-8p-4s switch, downgrading ExtremeXOS from a higher version to a lower version can render the PoE permanently inoperable, resulting in an RMA being needed to recover PoE functionality.
EXOS-33036	PoE error messages are logged when an ExtremeSwitching X435-8p-4s switch is rebooted.
EXOS-33198	Adding a debug CLI command to correct bad portmap in ExtremeSwitching X435 switches for PoE issues.
VLAN	
EXOS-33029	VLAN auto-move deletes VLANs on ports even if the VLAN is tagged on the port.

Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-77

The following issues were resolved in ExtremeXOS 31.7.1-Patch1-77. Release 31.7.1-Patch1-77 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.1-Patch1-77

Defect Number	Description
General	
EXOS-32253	Incorrect error message logged when a 40G optic is inserted into a 100G non-partitionable port.
EXOS-32277	A Fabric Attach Auth-Key length of 32 characters does not work.
EXOS-32437	The IP address is reversed in the SNMP response message.
EXOS-32665	SNMP query on pethPsePortIndex is returning both slot and port information instead of just port values.
EXOS-32679	Incorrect values are returned for Tx and Rx power sensor states when polled via SNMP.

Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.1-Patch1-77 (continued)

Defect Number	Description
EXOS-32699	The error message <code>Failed to set port dot1p 8</code> is displayed in the log.
EXOS-32702	<code>ezspantree.py</code> stops functioning after a certain amount of run time.
EXOS-32708	ELRP loop observed on the port that was converted from a cascade to a non-cascade port.
EXOS-32710	The log message <code>Failed to add legacy capacity license</code> is displayed after every reboot of the switch.
EXOS-32795	Edge-Safeguard blocked an MLAG port when the MLAG device reboots, with no signs of a loop.
EXOS-32860	Process HAL crashes with signal 4, leading to a switch reboot.
EXOS-32867	SLPP Guard not disabling the ports if CPU congestion is present.
ExtremeSwitching 5320 Series Switches	
EXOS-32861	The following PoE - 54V DC output error log message is displayed after a full power-cycle: <pre>13:03:20.03 <Erro:HAL.PoE.Error> (summitPoeRecoveryCheck) pse_system_power_query failed. 13:03:09.99 <Info:HAL.Sys.Info> (halPSDetectionProcessing) Internal Power Supply is disconnected. 13:03:09.99 <Info:HAL.Sys.Info> (summitPerPsuStatusToHalState) PSU 54V DC output changed.</pre>

Resolved Issues in ExtremeXOS and Switch Engine 31.7.1-Patch1-56

The following issues were resolved in ExtremeXOS 31.7.1-Patch1-56. Release 31.7.1-Patch1-56 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 18: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.1-Patch1-56

Defect Number	Description
General	
EXOS-32095	Netlogin web-base URL redirection does not work when HTTP is disabled and HTTPS is enabled.

Table 18: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.1-Patch1-56 (continued)

Defect Number	Description
EXOS-32104	When all the fans are removed and inserted, the status of all fans display the message "Operational at 0 RPM".
EXOS-32172	Egress rate-limit does not work if max-burst-size is not specified
EXOS-32194	An ACL process crash occurs when adding an l2pt profile in VPLS.
EXOS-32202	The outer tag was removed when sending LLDP frames over L2PT.
EXOS-32204	SNMP trap gets the wrong key after a switch restart.
EXOS-32213	Process bcmASYNC crashes with signal 6 when the number of adjacencies exceeds the hardware limit.
EXOS-32280	L3 Remote Mirror is not working when configured to capture packets on the VLAN interface.
EXOS-32301	The switch sends overheat condition as an SNMPv1 trap despite a MIB files definition of SNMPV2.
EXOS-32328	HTTPS Chalet login failure with the message <code>soap error session failed</code> when attempting to log in via the same tab.
EXOS-32466	SLPP configurations are removed from the port but retained in the configuration when disabling the sharing on the port.
EXOS-32467	XMC or XIQ Site Engine raises an alarm if a file named <code>EXTRTEST</code> exists with the TFTP server.
EXOS-32468	ARP packets are not sent via the Standby slot when starting the stack with ports disabled.
EXOS-32475	A PIM L3 cache miss occurs in ExtremeXOS FHR switches when the RP switch is from a different vendor.
EXOS-32495	VPEX process crashes with signal 11, leading to a switch restart.
ExtremeSwitching 5520 Series Switches	
EXOS-32471	An HAL error log occurs when upgrading an ExtremeSwitching 5520 with a 10504 Gbic.

Resolved Issues in ExtremeXOS and Switch Engine 31.7-Patch1-36

The following issues were resolved in ExtremeXOS 31.7-Patch1-36. Release 31.7-Patch1-36 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 19: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7-Patch1-36

Defect Number	Description
General	
EXOS-30094	The footer should be printed without consideration of CLI paging.
EXOS-30566	VLAN-based mirroring stops working if any port on the switch is partitioned.
EXOS-31711	Remove the default IP from the tech-support collector.
EXOS-31786	UDP profile doesn't forward traffic to /30 network if the switch interface has the same network configured.
EXOS-31802	FAN OID returns only the first fan serial number.
EXOS-31811	ExtremeXOS should throw an error to disable SLPP before configuring VPEX when it is enabled.
EXOS-31919	Access VLAN traffic is not forwarded over MLAG ports toward the network VLAN.
EXOS-32016	MAC locking behavior was not consistent with MLAG.
EXOS-32033	Slot port wildcard does not work.
EXOS-32038	The temperature is incorrectly displayed in the show temperature command output.
EXOS-32055	RESTCONF: The switch doesn't respond to System API calls and the CPU stays high for hal and EXPY processes.
ExtremeSwitching X435 Series Switches	
EXOS-31906	Switch stops transmitting power with a fault Overload to the AP port.
EXOS-31984	ExtremeXOS rescue with a USB on X435 8-port models is not working with 32.1 and 31.7 releases.
ExtremeSwitching 5420 Series Switches	
EXOS-31477	The "Image integrity check" field in the show switch management command output is set to "Unknown."

Resolved Issues in ExtremeXOS and Switch Engine 31.7-Patch1-17

The following issues were resolved in ExtremeXOS 31.7-Patch1-17. Release 31.7-Patch1-17 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, and 31.7. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 20: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7-Patch1-17

Defect Number	Description
General	
EXOS-30174	SNMPv3 user configuration is lost after a switch reboot.
EXOS-30317	Occasionally, the first login failure is not recorded, which causes the user to get locked out only after “max-failed-login” + 1 failed login attempts.
EXOS-31172	Adjacency of a local interface IP address is shown as invalidated in debug hal show ipv4Adj output, which affects traffic flow.
EXOS-31532	Proxy ARP functionality using only the Switch MAC address instead of the VRRP MAC address despite the Proxy ARP being configured to use VRRP.
EXOS-31603	AAA process crashes with signal 6 while AAA process is re-transmitting the authentication request.
EXOS-31693	Include the show vlan command in show tech-support with default configuration.
EXOS-31702	HAL process crashes with signal 6 after continuous port flap.
EXOS-31748	With RADIUS authentication enabled on SummitStack, CLI install image inactive fails to copy the active partition image to the inactive partition of the backup node.
EXOS-31767	ExtremeXOS switch reports an error log "Update failed on unit 0 (No resources for operation), flags 0x40000100, flags2 0x0."
ExtremeSwitching X435 Series Switches	
EXOS-31701	A memory leak occurs while accessing the switch via REST API.
EXOS-31709	The ExtremeSwitching X435 series inline-power randomly goes into the disabled state until the switch is factory reset.

Resolved Issues in ExtremeXOS and Switch Engine 31.7

The following issues were resolved in ExtremeXOS 31.7. Release 31.7 includes all fixes up to and including the following versions: 11.6.5.3 and earlier, 12.0.5, 12.1.7, 12.2.2-patch1-12, 12.3.6, 12.4.5, 12.5.5, 12.6.3, 12.6.5, 12.7.1, 15.1.5, 15.2.4, 15.3.3, 15.4.1, 15.5.1, 15.5.2, 15.6.1, 15.6.2, 15.7.1, 16.1, 16.1.2, 16.1.3, 21.1, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 31.1, 31.2, 31.3, 31.4, 31.5, and 31.6. For information about those fixes, see the release notes for the specific release.

Release 31.7 also includes fixes for issues found in Switch Engine 31.6. Release 31.6 was the first version of Switch Engine.

Table 21: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7

Defect Number	Description
General	
EXOS-29799	A rtmgr process may end unexpectedly after running the disabling/enabling bgp command.
EXOS-30432	Missing error details in the printed <code>summitCardGetMaxPhyTemp</code> log.
EXOS-30488	If more than 10 optics are inserted into an ExtremeSwitching X465, the switch doesn't recognize a some optics after a reboot.
EXOS-31064	The switch is rebooting due to a process "OSPF" crash.
EXOS-31159	Unable to authenticate ExtremeXOS switches against Amazon's TACACS+ server.
EXOS-31200	Need to remove the extra padding added for VLAN.
EXOS-31244	The t1 and t4 timestamps used to calculate the delay are not displayed in the EMS logs.
EXOS-31274	Edge-Safeguard Disables an MLAG port when the MLAG device reboots, with no signs of a loop.
EXOS-31285	A Nettools process crash occurs while processing the SNMP get request of the MIB <code>icmpMsgStatsTable</code> .
EXOS-31311	Need to remove extra space between the trailing ">" of the PRI part and the Timestamp.
EXOS-31360	Process FDB crashes when the switch receives SNMP walk for the MIB <code>extremeFdbPermFdbTable</code> .
EXOS-31368	The configuration configure elrp-client disable-ports is lost after a switch reboot.
EXOS-31374	An MSPD process crash occurs while processing packets of higher length.
EXOS-31421	BGP encrypted password displays in plain text in an error message.
EXOS-31475	ExtremeSwitching 5420 and 5520 do not bring up the port at 100 MB speed with 10060 or 10060H optics.
EXOS-31488	The SSH status occasionally becomes invalid after a switch reboot.
EXOS-31509	10504 transceivers (SFP28/25G/10km) may not be configured for proper 25G operation.
EXOS-31539	STP show commands need to be added in show tech .
ACL	
EXOS-30569	When an internal system ACL fails to install, the failure is noted as an Information Severity instead of an Error Severity.

Table 21: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7 (continued)

Defect Number	Description
ExtremeSwitching X440-G2 Series Switches	
EXOS-30482	A process policy signal 6 crash occurs in ExtremeSwitching X440-G2 Series switches.
ExtremeSwitching X590 Series Switches	
EXOS-31136	100G QSFP28 Direct Attach Cables are reporting a partition mismatch in ExtremeXOS despite having the correct partition (1x100G).
Extended Edge Switching	
EXOS-31210	VPEX rings did not recover after rebooting a Controlling Bridge.
MLAG	
EXOS-31049	FDB was not expired after moving the MAC via an IPARP packet in one of the MLAG ports.
Netlogin	
EXOS-31180	A Netlogin process crash with signal 6 occurs while writing a file descriptor to the variable.
SummitStack	
EXOS-31406	Backup SummitStack slots suddenly reboot after approximately 1,382 days of uptime.