



ExtremeXOS and Switch EngineSwitch Engine Release Notes Software Version 31.7.3-Patch1-44

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Preface

Read the following topics to learn about:

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

Text Conventions

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

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

Table 1: Notes and warnings






| Icon | Notice type | Alerts you to... |
|---|-------------|---|
|  | Tip | Helpful tips and notices for using the product |
|  | Note | Useful information or instructions |
|  | Important | Important features or instructions |
|  | Caution | Risk of personal injury, system damage, or loss of data |
|  | Warning | Risk of severe personal injury |

Table 2: Text

| Convention | Description |
|--|---|
| screen displays | This typeface indicates command syntax, or represents information as it is displayed on the screen. |
| The words <i>enter</i> and <i>type</i> | When you see the word <i>enter</i> in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says <i>type</i> . |
| 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. |
| ... | 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. |

Documentation and Training

Find Extreme Networks product information at the following locations:

[Current Product Documentation](#)

[Release Notes](#)

[Hardware and Software Compatibility](#) for Extreme Networks products

[Extreme Optics Compatibility](#)

[Other Resources](#) such as articles, white papers, and case studies

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

Extreme Portal

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

The Hub

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

Call GTAC

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

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.

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- 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.



Overview

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These release notes documents ExtremeXOS and Switch Engine , 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 17.

Security Information

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

Linux Kernel

ExtremeXOS and Switch Engine 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 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 .

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 30.1 and Earlier

About This Task

Version 31.7.3 adds a new modular software package (XMOD) to help upgrade a stack from from ExtremeXOS 30.1 or 22.x or older to 30.3 or later. The XMODs are `onie-tftp-1.1.xmod`, `summitX-tftp-1.1.xmod`, and `summit_arm-tftp-1.1.xmod`. For more information, see [Knowledge Base article 000058389](#).

If you choose to forego this XMOD, then you cannot automatically update a switch running ExtremeXOS 30.1 or earlier to ExtremeXOS 30.3 or later due to a file system compatibility issue. If a switch has ExtremeXOS 30.1 or earlier, prior to inserting the switch into the stack topology, you need to upgrade the switch manually:

Procedure

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 .

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. |

^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 |
|--------------------------------|---|
| IPFIX | Disabled. |
| IP NAT | Disabled. |
| EAPS | Disabled. |
| EDP | Enabled on management port. |
| ELRP | Disabled. |
| ESRP | Disabled. |
| Extended Edge Switching (VPEX) | Disabled. |
| 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. |

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

| Feature | 31.6 and later |
|-------------------------------|--|
| PoE | Enabled. |
| Fast PoE | Disabled. |
| Perpetual PoE | Disabled. |
| RADIUS | Disabled for both switch management and network login. |
| RIP | Disabled. |
| RMON | Disabled. However, even in the disabled state, the switch responds to RMON queries and sets for alarms and events. |
| sFlow | Disabled. |
| SNMP server | Disabled. 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 |

Table 6: Image Types (Prefixes) (continued)

| Switches | Image File Type (Prefix) |
|-----------------------------------|--|
| 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

This section lists the new and corrected features supported in the 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.

Migration to Open-Source Simple Network Management Protocol

This version replaces the Simple Network Management Protocol (SNMP) stack with an open-source Net-SNMP for network management. The major set of features the operating system SNMP supports include:

- SNMPv1/v2/v3 support
- GET/SET/GETBULK operations
- Community configuration for SNMPv2c
- SNMPv3 user configuration
- SNMPv3 group and access configuration
- Mib-view support for restricting access to subset of MIB tree
- SNMPv1/v2/v3 trap support
- Support for default group and access configurations
- Support for VRF based routing protocol MIB views using context option
- SNMPv3 INFORM support for notifications

Limitations

The following table describes the limitations of implementing open-source Net-SNMP:

Table 7: Net-SNMP Limitations

| Feature | Limitation |
|--------------------------------------|---|
| Remote Monitoring (RMON) alarms | Only RMON Alarm MIBs are supported |
| Notification-table | Net-SNMP implementation supports only default table with no filtering |
| Switch Network Monitoring (SMON) MIB | Not supported |
| show snmp statistics | Will not show VR-specific counters |
| 3DES | 3DES is not supported as a privacy protocol for SNMPv3 users |
| Filter-Profile functionality | Not supported |
| Community with blank string | Not supported |
| Traps sent when no VR is specified | Send traps by default on Management VR if no VR is specified |

Modified CLI Commands

The following commands are modified based on the limitations described in the previous section:

configure snmpv3 add user - removes the 3DES option.

show checkpoint-data, restart process, start process, terminate process - removes snmpSubAgent.

show snmp vr-name - shows the combined statistics of all the VRs in the switch and not specifically for each VR.

Obsolete Commands

The following commands are not supported in this version based on the limitations of this feature:

- **clear snmp notification-log**
- **configure snmp add notification-log**
- **configure snmp delete notification-log**
- **configure snmp notification-log filter-profile name**
- **configure snmp notification-log**
- **create-snmp-trap**
- **disable snmp notification-log**
- **enable snmp notification-log**
- **show snmp notification-log**
- **show snmp notification-log entry**

- `show snmp notification-log name`
- `show snmpv3 counters`

EMS Messages

The following EMS Messages are not supported in this version:

- SNMP.Subagent Messages - all
- RMON.Alarm.TxEPICReqFail
- SNMP.Master.CfgNotSync
- SNMP.Master.SubagentReg
- SNMP.Master.ReqDropSNMPDsbl
- SNMP.Master.ReqDrop
- SNMP.Master.EPICReqDrop
- SNMP.Master.ReqDropVRDsbl

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 18)—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 .

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 .

- **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 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 8: 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 8: 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 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

Supported MIBs

About This Task

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 .

Tested Third-Party Products

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

Tested RADIUS Servers

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS

Tested Third-Party Clients

The following third-party clients are fully tested:

- Windows 7
- Windows Vista
- Linux (IPv4 and IPv6)
- Windows XP (IPv4)

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 23
- [Value Edge License Limits](#) on page 25
- [Edge License Limits](#) on page 38
- [Advanced Edge License Limits](#) on page 64
- [Core License Limits](#) on page 74
- [Notes for Limits Tables](#) on page 80

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

Limits Overview

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

- [Value Edge License Limits](#) on page 25
- [Edge License Limits](#) on page 38
- [Advanced Edge License Limits](#) on page 64
- [Core License Limits](#) on page 74

Non-universal switches include the following license levels:

| Switch Category | Switches | Applicable License Levels |
|-------------------------------|---|---|
| Non-universal switches | X435 *, X440-G2, X450-G2, X460-G2, X465, X590, X620, X690, X695 | Value Edge *, Edge, Advanced Edge, Core |

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.

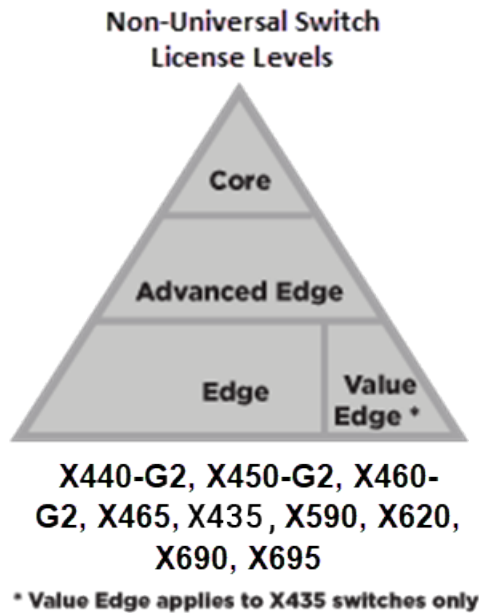


Figure 1: License Levels for non-Universal Switches

For more information about licenses, see .

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 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 9: 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 |
| 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 |
| CFM —maximum number of CFM associations. | ExtremeSwitching X435 | 256 |
| CFM —maximum number of CFM up end points. | ExtremeSwitching X435 | 32 |

Table 9: Supported Limits for Value Edge License (continued)

| Metric | Product | Limit |
|--|--|-------------------------|
| 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 |
| 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 |

Table 9: Supported Limits for Value Edge License (continued)

| Metric | Product | Limit |
|--|-----------------------|---------------------|
| 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 |
| Identity management —maximum number of Kerberos servers that can be configured. | ExtremeSwitching X435 | 20 |
| Identity management —maximum database memory size. | ExtremeSwitching X435 | 512 |

Table 9: Supported Limits for Value Edge License (continued)

| Metric | Product | Limit |
|--|-----------------------|--------|
| 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 |
| IGMPv3 subscriber —maximum number of IGMPv3 subscribers per switch. ⁿ | ExtremeSwitching X435 | 10,000 |

Table 9: Supported Limits for Value Edge License (continued)

| Metric | Product | Limit |
|---|-----------------------|--------------------|
| <p>IP ARP entries in software—maximum number of IP ARP entries in software.</p> <p>Note: Might be limited by hardware capacity of FDB (maximum L2 entries).</p> | ExtremeSwitching X435 | 20,424 |
| <p>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.</p> | ExtremeSwitching X435 | 509 ^h |
| <p>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.”</p> | ExtremeSwitching X435 | 500 ^h |
| <p>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.</p> | ExtremeSwitching X435 | 3,100 ^h |
| <p>IPv4 routes—maximum number of static IPv4 routes in software (combination of unicast and multicast routes).</p> | ExtremeSwitching X435 | 32 |
| <p>IPv4 routes (LPM entries in hardware)— number of IPv4 routes in hardware.</p> | ExtremeSwitching X435 | 32 |
| <p>IPv6 addresses on an interface—maximum number of IPv6 addresses on an interface.</p> | ExtremeSwitching X435 | 15 |
| <p>IPv6 addresses on a switch—maximum number of IPv6 addresses on a switch.</p> | ExtremeSwitching X435 | 15 |

Table 9: Supported Limits for Value Edge License (continued)

| Metric | Product | Limit |
|---|-----------------------|-------|
| 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 9: 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 9: 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 9: 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 9: 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 9: 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 ÷ 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 9: 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 9: 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 9: 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 License Limits

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

Table 10: Supported Limits for Edge 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 X450-G2, X460-G2 | 1,024 ingress 512 egress |
| | ExtremeSwitching X590, X465, X690 | 2,048 ingress 512 egress |
| | ExtremeSwitching X695 | 6,000 ingress 2,000 egress |
| Access lists (policies) —suggested maximum number of lines in a single policy file. | All platforms, except X435 | 300,000 |
| Access lists (policies) —maximum number of rules in a single policy file. ^a | ExtremeSwitching X460-G2, X450-G2 | 4,096 ingress 1,024 egress |
| | ExtremeSwitching X620, X440-G2 | 2,048 ingress 512 egress |
| | ExtremeSwitching X590, X465, X690, X695 | 8,192 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, X590, X465 | 2,048 ingress only |
| | ExtremeSwitching X690, X695 | 1,024 ingress only |
| | ExtremeSwitching X620, X440-G2 | 512 ingress only |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|---|
| Access lists (slices) — number of ACL slices. | ExtremeSwitching X460-G2, X450-G2 | 16 ingress 4 egress |
| | ExtremeSwitching X590, X465, X690, X695 | 12 ingress 4 egress |
| | ExtremeSwitching X440-G2, X620 | 8 ingress 4 egress |
| Access lists (slices) — number of ACL slices in first stage (VFP). | ExtremeSwitching X450-G2, X460-G2, X465, X620, X440-G2, X590, X690, X695 | 4 ingress only |
| ACL Per Port Meters —number of meters supported per port. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X690, X465, X695 | 16 |
| ACL port ranges. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 32 |
| Meters Packets-Per-Second Capable. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X690, X465, X695 | Yes |
| AVB (audio video bridging) —maximum number of active streams. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2 | 1,024 |
| | ExtremeSwitching X465, X695, X590, X690 | 4,096 |
| BFD sessions (Software Mode) —maximum number of BFD sessions. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 (default timers—1 sec) | 512 |
| | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 (minimal timers—100 msec) | 10 ^C |
| BFD IPv4 sessions (Hardware Assisted) — maximum number of IPv4 BFD sessions. | ExtremeSwitching X460-G2, X590, X690, X465, X695 | 900 (PTP not enabled) 425 (PTP enabled) 256 (with 3 ms transmit interval) |
| BFD IPv6 sessions (Hardware Assisted) — maximum number of IPv6 BFD sessions. | ExtremeSwitching X460-G2, X590, X690, X465, X695 | 425 (PTP not enabled) |
| BOOTP/DHCP relay — maximum number of BOOTP or DHCP servers per virtual router. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X620, X590, X690, X695 | 8 |
| BOOTP/DHCP relay — maximum number of BOOTP or DHCP servers per VLAN. | ExtremeSwitching X460-G2, 450-G2, X440-G2, X465, X620, X590, X690, X695 | 8 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|---|
| BOOTP/DHCP relay —maximum number of DHCPv4/v6 relay agents | ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X620, X590, X690, X695 | 4,000 |
| Connectivity fault management (CFM) —maximum number of CFM domains. Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 8 |
| CFM —maximum number of CFM associations. Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 256 |
| CFM —maximum number of CFM up end points. Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 32 |
| CFM —maximum number of CFM down end points. Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 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, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 2,000 |
| CFM —maximum number of dot1ag ports. Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 128 |
| CFM —maximum number of CFM segments. Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 1,000 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|---|
| <p>CFM—maximum number of MIPs.</p> <p>Note: With Advanced Edge license or higher.</p> | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 256 |
| <p>CLEAR-Flow—total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs.</p> | ExtremeSwitching X460-G2, X450-G2 | 4,094 |
| | ExtremeSwitching X440-G2, X620 | 1,024 |
| | ExtremeSwitching X590, X465, X690, X695 | 8,192 |
| <p>Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)—maximum number of DCBX application TLVs.</p> | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X465, X690, X695 | 8 |
| <p>DHCPv6 Prefix Delegation Snooping—Maximum number of DHCPv6 prefix delegation snooped entries.</p> | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 256 (with underlying protocol RIPng) 128 (with underlying protocol OSPFv3) 1,024 (with static routes) |
| <p>DHCP snooping entries—maximum number of DHCP snooping entries.</p> | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X690, X465, X695 | 2,048 |
| <p>Dynamic ACLs—maximum number of ACLs processed per second.</p> <p>Note: Limits are load-dependent.</p> | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X690, X465, X695 | |
| | <p>with 50 DACLs</p> <p>with 500 DACLs</p> | 10 5 |
| <p>EAPS domains—maximum number of EAPS domains.</p> <p>Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.</p> <p>Note: You can increase the number of domains by upgrading to the Advanced Edge license.</p> | ExtremeSwitching X450-G2, X460-G2, X440-G2, X620, X590, X690, X465, X695 | 4 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|--|
| EAPSV1 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2-24T/P | 1,000 |
| | ExtremeSwitching X590, X690, X465, X695 | 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, X620, X440-G2, X590, X690, X465, X695 | 4 |
| ERPSV1 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching X590, X690, X465, X695 | 2,000 |
| | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2-24T/P | 1,000 |
| ERPSV2 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X590, X690, X465, X695 | 2,000 |
| | ExtremeSwitching X620, X440-G2-24T/P | 500 |
| ELSM (vlan-ports) — maximum number of VLAN ports. | ExtremeSwitching X450-G2, X460-G2, X620, X590, X465, X690, X695 | 5,000 |
| | ExtremeSwitching X440-G2-24T/P | 4,000 |
| Extended Edge Switching maximum BPEs —maximum number of attached bridge port extenders (BPEs). | ExtremeSwitching X465, X590, X690 | 48 |
| Extended Edge Switching maximum cascade ports —maximum number of upstream ports on bridge port extenders (BPEs). | ExtremeSwitching X465, X590, X690 | 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, X690 | 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, X690 | 8 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|---|---|
| Extended Edge Switching maximum VLANs —maximum number of VLANs - Includes all VLANs | ExtremeSwitching X465, X590, X690 | 4,094 |
| Extended Edge Switching VLAN+ port memberships —maximum number of VLAN+ (extended) port memberships. | ExtremeSwitching X465, X590, X690 | 12,000 in hash mode (default) 131,000 in port-group mode |
| Forwarding rate —maximum L3 software forwarding rate. | ExtremeSwitching X440-G2 ExtremeSwitching X450-G2 ExtremeSwitching X465 ExtremeSwitching X460-G2 ExtremeSwitching X590 ExtremeSwitching X620 ExtremeSwitching X690 ExtremeSwitching X695 | 6,460 pps 16,000 pps 28,497 pps 17,000 pps 18,162 pps 6,968 pps 17,000 pps 34,813 pps |
| FDB (unicast blackhole entries) —maximum number of unicast blackhole FDB entries. | ExtremeSwitching X460-G2 ExtremeSwitching X450-G2 ExtremeSwitching X620, X440-G2 ExtremeSwitching X590, X465, X690 ExtremeSwitching X695 | 49,152 ^f 34,816 ^f 16,384 ^f 278,528 ^f 294,912 ^f |
| FDB (multicast blackhole entries) —maximum number of multicast blackhole FDB entries. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 ExtremeSwitching X590, X465, X690, X695 | 1,024 4,096 |
| FDB (maximum L2 entries) —maximum number of MAC addresses. | ExtremeSwitching X460-G2 ExtremeSwitching X450-G2 ExtremeSwitching X620, X440-G2 ExtremeSwitching X590, X465, X690, X695 ExtremeSwitching X695 | 98,300 ^g 68,000 ^g 16,384 278,528 ^g 294,912 ^g |
| FDB (maximum L2 entries) —maximum number of multicast FDB entries. | ExtremeSwitching X590, X465, X690, X695 ExtremeSwitching X450-G2, X460-G2, X620, X440-G2 | 4,096 1,024 |
| Identity management —maximum number of Blacklist entries. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 512 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|-------|
| Identity management —maximum number of Whitelist entries. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 512 |
| Identity management —maximum number of roles that can be created. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 64 |
| Identity management —maximum role hierarchy depth allowed. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 5 |
| Identity management —maximum number of attribute value pairs in a role match criteria. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 16 |
| Identity management —maximum number of child roles for a role. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| Identity management —maximum number of policies/dynamic ACLs that can be configured per role. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| Identity management —maximum number of LDAP servers that can be configured. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| Identity management —maximum number of Kerberos servers that can be configured. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 20 |
| Identity management —maximum database memory size. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 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, X620, X440-G2, X590, X465, X690, X695 | 100 |

Table 10: Supported Limits for Edge License (continued)

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

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|-------------------------------|
| IGMPv3 subscriber —maximum number of IGMPv3 subscribers per switch. ⁿ | ExtremeSwitching X460-G2, X450-G2 | 20,000 |
| | ExtremeSwitching X620, X440-G2 | 17,500 |
| | ExtremeSwitching X590, X465, X690, X695 | 45,000 |
| 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 X460-G2 | 57,344 (up to) ^h |
| | ExtremeSwitching X450-G2 | 47,000 (up to) ^h |
| | ExtremeSwitching X440-G2, X620 | 20,480 |
| | ExtremeSwitching X590, X465, X690 | 157,694 (up to) ^h |
| | ExtremeSwitching X695 | 184,318 (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 X460-G2 | 50,000 (up to) ^h |
| | ExtremeSwitching X450-G2 | 39,000 (up to) ^h |
| | ExtremeSwitching X620 | 1,500 |
| | ExtremeSwitching X440-G2 | 1,000 |
| | ExtremeSwitching X590, X465, X690 | 119,000 (up to) ^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 X460-G2 | 43,000 (up to) ^h |
| | ExtremeSwitching X450-G2 | 29,000 (up to) ^h |
| | ExtremeSwitching X620 | 1,500 |
| | ExtremeSwitching X440-G2 | 1,000 |
| | ExtremeSwitching X590, X465, X690 | 109,000 (up to) ^h |
| | ExtremeSwitching X695 | 125,000 (up to) ^h |
| IP flow information export (IPFIX) —number of simultaneous flows. | ExtremeSwitching X460-G2 | 2,048 ingress 2,048 egress |
| | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | N/A |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|------------------------------|
| IPv4 remote hosts in hardware with zero LPM routes —maximum recommended number of IPv4 remote hosts (hosts reachable through a gateway) in hardware when LPM routing is not used. Assumes number of IP route reserved entries is 0, and number of IPv4 ARP entries present is 100 or less. | ExtremeSwitching X460-G2 | 73,000 ^h |
| | ExtremeSwitching X450-G2 | 61,000 (up to) ^h |
| | ExtremeSwitching X440-G2, X620 | 3,500 |
| | ExtremeSwitching X590, X465, X690 | 216,000 (up to) ^h |
| | ExtremeSwitching X695 | 241,000 (up to) ^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 X590, X465, X690, X695 | 131,000 |
| IPv4 routes (LPM entries in hardware) — number of IPv4 routes in hardware. | ExtremeSwitching X460-G2 | 12,000 |
| | ExtremeSwitching X450-G2 | 16,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 131,000 ^q |
| | ExtremeSwitching X620, X440-G2 | 480 |
| IPv6 6in4 tunnel —maximum number of IPv6 6in4 tunnels. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 255 |
| | ExtremeSwitching X440-G2, X620 | N/A |
| IPv6 6to4 tunnel —maximum number of IPv6 6to4 tunnels. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 1 (per virtual router) |
| | ExtremeSwitching X440-G2, X620 | N/A |
| IPv6 addresses on an interface —maximum number of IPv6 addresses on an interface. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 255 |
| IPv6 addresses on a switch —maximum number of IPv6 addresses on a switch. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 2,048 |
| | ExtremeSwitching X620, X440-G2 | 510 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|---|------------------------------|
| IPv6 host entries in hardware —maximum number of IPv6 neighbor entries in hardware. | ExtremeSwitching X460-G2, | 22,000 ^h |
| | ExtremeSwitching X450-G2 | 12,000 ^h |
| | ExtremeSwitching X440-G2 | 1,000 |
| | ExtremeSwitching X620 | 1,500 |
| | ExtremeSwitching X590, X465, X690 | 24,500 ^s |
| | ExtremeSwitching X695 | 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 X590, X465, X690, X695 | 65,000 ^q |
| IPv6 routes (LPM entries in hardware) —maximum number of IPv6 routes in hardware. | ExtremeSwitching X460-G2 | 6,000 |
| | ExtremeSwitching X450-G2 | 8,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 65,000 ^q |
| | ExtremeSwitching X620, X440-G2 | 240 |
| IPv6 routes with a mask greater than 64 bits in hardware —maximum number of such IPv6 LPM routes in hardware. | ExtremeSwitching X590, X465, X690, X695 | 8,192 ^r |
| | ExtremeSwitching X440-G2, X620 | 1,024 |
| | ExtremeSwitching X450-G2, X460-G2 | 2,048 |
| IPv6 route sharing in hardware —route mask lengths for which ECMP is supported in hardware. | ExtremeSwitching X460-G2, X450-G2, X620 | 0–64 >64 single path only |
| | ExtremeSwitching X590, X465, X690, 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, X450-G2, X590, X465, X690, X695 | 2,048 |
| | ExtremeSwitching X620, X440-G2 | 510 |
| IP multicast static routes —maximum number of permanent multicast IP routes. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 1,024 |
| IP unicast static routes —maximum number of permanent IP unicast routes. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 1,024 |
| | ExtremeSwitching X620, X440-G2 | 480 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|--|
| <p>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.</p> | <p>ExtremeSwitching X460-G2, X450-G2, X620, X590, X465, X690, X695</p> <p>ExtremeSwitching X440-G2</p> | <p>2, 4, 8, 16, 32, or 64</p> <p>N/A</p> |

Table 10: Supported Limits for Edge 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 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 X590, X465, X690, 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 more information about RIOT, see . | |
| | ExtremeSwitching X870 | |
| | if maximum gateways is 2 | 2,046 |
| | if maximum gateways is 4 | 2,046 |
| | 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 |
| | ExtremeSwitching X440-G2 | N/A |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|---------|
| IP multinetting (secondary IP addresses) —maximum number of secondary IP addresses per VLAN. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 255 |
| Jumbo frames —maximum size supported for jumbo frames, including the CRC. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 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 X695 | 73,000 |
| | ExtremeSwitching X460-G2 | 24,000 |
| | ExtremeSwitching X450-G2 | 14,000 |
| | ExtremeSwitching X620, X440-G2 | 5,000 |
| | ExtremeSwitching X590, X465, X690 | 67,000 |
| 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 X620, X440-G2 | 1,500 |
| | ExtremeSwitching X590, X465, X690 | 93,000 |
| | ExtremeSwitching X695 | 104,000 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|---|--|
| Layer-3 IPv6 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 MLD sender per switch, PIM IPv6 cache. Assumes source-group-vlan mode as lookup key. | ExtremeSwitching X460-G2 | 14,000 |
| | ExtremeSwitching X450-G2 | 10,000 |
| | ExtremeSwitching X620, X440-G2 | 700 |
| | ExtremeSwitching X590, X465, X690 | 48,000 |
| | ExtremeSwitching X695 | 52,000 |
| Load sharing —maximum number of load sharing groups. 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. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 128 |
| Load sharing —maximum number of ports per load-sharing group. | For standalone and stacked: ExtremeSwitching X620, X440-G2 | 8 |
| | For standalone: ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 32 |
| | For stacked: ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 64 |
| Logged messages —maximum number of messages logged locally on the system. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 20,000 |
| MAC-based security —maximum number of MAC-based security policies. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 1,024 |
| MAC Locking —Maximum number of MAC locking stations that can be learned on a port. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X695 | 64 (static MAC locking stations) 600 (first arrival MAC locking stations) |
| Meters —maximum number of meters supported. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X465, X690, X695 | 2,048 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|---|
| Maximum mirroring instances. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, 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) |
| 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, X620, X440-G2, X590, X465, X690, X695 | 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 X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 128 |
| Mirroring, one-to-many (monitor port) —maximum number of one-to-many monitor ports. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 16 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|--------|
| MLAG ports —maximum number of MLAG ports allowed. | ExtremeSwitching X690, X695 | 61 |
| | ExtremeSwitching X440-G2, X450-G2 | 51 |
| | ExtremeSwitching X460-G2 | 53 |
| | ExtremeSwitching X620 | 15 |
| | ExtremeSwitching X590 | 35 |
| | ExtremeSwitching X465 | 55 |
| | Stacking | 480 |
| MLAG peers —maximum number of MLAG peers allowed. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 2 |
| Multicast listener discovery (MLD) snooping per-VLAN filters —maximum number of VLANs supported in per-VLAN MLD snooping mode. | ExtremeSwitching X460-G2 | 768 |
| | ExtremeSwitching X450-G2 | 508 |
| | ExtremeSwitching X620, X440-G2 | 256 |
| | ExtremeSwitching X590, X465, X690, X695 | 1,500 |
| Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per port. ⁿ | ExtremeSwitching X450-G2, X460-G2 | 4,000 |
| | ExtremeSwitching X620, X440-G2 | 3,500 |
| | ExtremeSwitching X590, X465, X690, X695 | 4,000 |
| Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per switch. ⁿ | ExtremeSwitching X460-G2, X450-G2, X620, X440-G2 | 10,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 45,000 |
| Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per port. ⁿ | ExtremeSwitching X460-G2, X450-G2 | 4,000 |
| | ExtremeSwitching X620, X440-G2 | 3,500 |
| | ExtremeSwitching X590, X465, X690, X695 | 4,000 |
| Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per switch. ⁿ | ExtremeSwitching X460-G2, X450-G2, X620, X440-G2 | 10,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 45,000 |
| Multicast listener discovery (MLD)v2 maximum source per group —maximum number of source addresses per group. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 200 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|-------|
| Multicast listener discovery (MLD) SSM-map entries —maximum number of MLD SSM mapping entries. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 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, X620, X440-G2, X590, X465, X690, X695 | 50 |
| Network Login —maximum number of clients being authenticated on MAC-based VLAN enabled ports. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 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 | 1,024 |
| | ExtremeSwitching X690, X695 | 512 |
| | ExtremeSwitching X620, X440-G2 | 256 |
| Network Login —maximum number of dynamic VLANs. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 2,000 |
| | ExtremeSwitching X440-G2, X620 | 1,024 |
| Network Login VLAN VSAs —maximum number of VLANs a client can be authenticated on at any given time. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 10 |
| Network Service Identifiers (NSI)/VLAN mappings —maximum number of VLANs to NSI mappings. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 94 |
| Network Address Translation (NAT) VLANs —maximum number of NAT VLANs. | ExtremeSwitching X465, X590, X690, X695 | 4 |
| Network Address Translation (NAT) Sessions —number of NAT sessions supported (non twice-NAT). | ExtremeSwitching X465, X590, X690, X695 | 1,023 |
| Node Alias —maximum number of entries per slot. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X690, X465, X695 | 8,192 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|---|
| 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, X590, X465, X690, X695 | 64 |
| ONEPolicy Roles/Profiles —maximum number of policy roles/profiles. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 63 |
| ONEPolicy Rules per Role/Profile —maximum number of rules per role/policy. | ExtremeSwitching X450-G2, X460-G2 ExtremeSwitching X620, X440-G2 ExtremeSwitching X465, X590, X690, X695 | IPv6 rules: 256 IPv4 rules: 256 L2 Rules: 184 MAC Rules: 256 IPv6 and Mac Rules: 0 Ipv4 Rules: 256 (per switch) L2 Rules: 184 (per switch) IPv4 Rules: 512 IPv6 Rules: 512 MAC Rules: 512 L2 Rules: 440 |
| ONEPolicy Authenticated Users per Switch —maximum number of authenticated users per switch only with TCI-Overwrite enabled. | ExtremeSwitching X450-G2, X460-G2, X590, X465 ExtremeSwitching X690, X695 ExtremeSwitching X620, X440-G2 Stacking | 1,024 512 256 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 X590, X465, X690 ExtremeSwitching X460-G2,, X695 ExtremeSwitching X450-G2 ExtremeSwitching X620, X440-G2 Stacking | 24,576 12,288 6,144 1,536 1,536–65,534 |

Table 10: Supported Limits for 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 X450-G2 | 6,144 |
| | ExtremeSwitching X460-G2, X695 | 12,288 |
| | ExtremeSwitching X590, X465, X690 | 24,576 |
| | ExtremeSwitching X440-G2, X620 | 1,536 |
| 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 | 1,024 |
| | ExtremeSwitching X690, X695 | 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 | 952 |
| | ExtremeSwitching X620, X440-G2 | 440 |
| | ExtremeSwitching X590, X465, X690, X695 | 1,976 |
| 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 | 256 |
| | ExtremeSwitching X620, X440-G2 | N/A |
| | ExtremeSwitching X590, X465, X690, X695 | 512 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest). | ExtremeSwitching X450-G2, X460-G2 | 256 |
| | ExtremeSwitching X620, X440-G2 | N/A |
| | ExtremeSwitching X590, X465, X690, X695 | 512 |
| 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, X620, X440-G2, | 256 |
| | ExtremeSwitching X590, X465, X690, X695 | 512 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|------------------|
| 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 | 184 |
| | ExtremeSwitching X620, X440-G2 | 184 |
| | ExtremeSwitching X590, X465, X690, X695 | 440 |
| OnePolicy Maximum number of rules supported in AccessList mode —maximum number of rules in AccessList mode. | ExtremeSwitching X450-G2, X460-G2 | 3,000 |
| | ExtremeSwitching X440-G2, X620 | 952 |
| | ExtremeSwitching X690, X695 | 3,512 |
| | ExtremeSwitching X435 | 440 |
| | ExtremeSwitching X590 | 4,024 |
| Policy-based routing (PBR) redundancy —maximum number of flow-redirects. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 256 ^o |
| Policy-based routing (PBR) redundancy —maximum number of next hops per each flow-direct. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 32 ^o |
| Private VLANs —maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN. | ExtremeSwitching X460-G2 | 53 |
| | ExtremeSwitching X450-G2 | 51 |
| | ExtremeSwitching X440-G2 | 47 |
| | ExtremeSwitching X620 | 15 |
| | ExtremeSwitching X690, X695 | 71 |
| | ExtremeSwitching X590, X465 | 31 |
| 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 X460-G2, X590, X465, X690, X695 | 1,024 |
| | ExtremeSwitching X450-G2 | 510 |
| | ExtremeSwitching X440-G2 | 255 |
| | ExtremeSwitching X620 | 510 |
| Private VLANs —maximum number of private VLANs in an L2-only environment. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 1,280 |
| | ExtremeSwitching X450-G2 | 597 |
| | ExtremeSwitching X440-G2, X620 | 255 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|---|---|
| PTP/1588v2 Clock Ports | ExtremeSwitching X460-G2 | 31 for boundary clock 1 for ordinary clock |
| | ExtremeSwitching X440-G2, X465, X620, X590, X690, X695 | N/A |
| PTP/1588v2 Clock Instances | ExtremeSwitching X460-G2 | 2 combinations: • Transparent clock + ordinary clock • Transparent clock + boundary clock |
| | ExtremeSwitching X440-G2, X465, X620, X590, X690, X695 | N/A |
| PTP/1588v2 Unicast Static Slaves | ExtremeSwitching X460-G2 | 40 entries per clock port |
| | ExtremeSwitching X440-G2, X465, X620, X590, X690, X695 | N/A |
| PTP/1588v2 Unicast Static Masters | ExtremeSwitching X460-G2 | 10 entries per clock type |
| | ExtremeSwitching X440-G2, X465, X620, X590, X690, X695 | N/A |
| Route policies—suggested maximum number of lines in a route policy file. | ExtremeSwitching X460-G2, X620, X440-G2, X590, X465, X690, X695 | 10,000 |
| RIP Learned Routes—maximum number of RIP routes supported without aggregation. | ExtremeSwitching X460-G2, X440-G2, X620, X590, X465, X690, X695 | 10,000 |
| RIP interfaces on a single router—recommended maximum number of RIP routed interfaces on a switch. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 256 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| RIPng learned routes—maximum number of RIPng routes. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 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, X460-G2, X620, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X440-G2 | 32 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|-------|
| 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 X620 | 256 |
| | ExtremeSwitching X460-G2, X450-G2, X440-G2 | 128 |
| | ExtremeSwitching X590, X465, X690, X695 | 384 |
| Spanning Tree— maximum number of multiple spanning tree instances (MSTI) domains. | ExtremeSwitching X450-G2, X460-G2, X620, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X440-G2, | 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 X460-G2, X450-G2, X620, X590, X465, X690, X695 | 600 |
| | ExtremeSwitching X440-G2 | 256 |
| Spanning Tree— maximum number of VLANs on all MSTP instances. | ExtremeSwitching X460-G2, X450-G2, X620, X590, X465, X690, X695 | 1,024 |
| | ExtremeSwitching X440-G2 | 512 |
| Spanning Tree (802.1d domains)— maximum number of 802.1d domains per port. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 1 |
| Spanning Tree (number of ports)— maximum number of ports including all Spanning Tree domains. | ExtremeSwitching X450-G2, X460-G2, X620, X590, X465, X690, X695 | 4,096 |
| | ExtremeSwitching X440-G2 | 2,048 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|----------------------|
| Spanning Tree (maximum VLANs) —maximum number of STP-protected VLANs (dot1d and dot1w). | ExtremeSwitching X460-G2, X450-G2, X620, X590, X465, X690, X695 | 1,024 |
| | ExtremeSwitching X440-G2 | 600 |
| SSH (number of sessions) —maximum number of simultaneous SSH sessions. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| Static MAC multicast FDB entries —maximum number of permanent multicast MAC entries configured into the FDB. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 1,024 |
| Syslog servers —maximum number of simultaneous Syslog servers that are supported. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 16 |
| Syslog targets —maximum number of configurable Syslog targets. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 16 |
| Telnet (number of sessions) —maximum number of simultaneous Telnet sessions. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| Virtual routers —maximum number of user-created virtual routers that can be created on a switch. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 63 |
| | ExtremeSwitching X440-G2, X620 | 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, X450-G2, X590, X465, X690, X695 | 960 * |
| | ExtremeSwitching X440-G2, X620 | 16 (local-only VRFs) |
| Virtual router protocols per VR —maximum number of routing protocols per VR. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 8 |
| | ExtremeSwitching X440-G2, X620 | N/A |
| Virtual router protocols per switch —maximum number of VR protocols per switch. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X440-G2, X620 | N/A |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|----------------------------|
| VLAN aggregation —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 1,000 |
| VLANS —includes all VLANS. 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.) | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 4,094 |
| VLANS (Layer 2) —maximum number of Layer 2 VLANS. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 4,094 |
| VLANS (Layer 3) —maximum number of VLANS performing IPv4 and/or IPv6 routing. Excludes sub-VLANS. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 ExtremeSwitching X440-G2, X620 | 2,048 510 |
| VLAN Port Interfaces (VPIF) —maximum number of VLAN port interfaces. | ExtremeSwitching X440-G2, X450-G2, X460-G2, X620 ExtremeSwitching X465, X590, X690, X695 | 65,536 131,585 |
| VLANS (maximum active port-based) —maximum active ports per VLAN when 4,094 VLANS are configured with the default license. | ExtremeSwitching X590, X465, X690, X695 ExtremeSwitching X440-G2 ExtremeSwitching X460-G2 ExtremeSwitching X620 ExtremeSwitching X450-G2 | 32 28 26 16 29 |
| VLANS (maximum active protocol-sensitive filters) —number of simultaneously active protocol filters in the switch. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 16 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|--|--|-------------------|
| VLAN translation —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN. | ExtremeSwitching X460-G2 | 53 |
| | ExtremeSwitching X450-G2 | 51 |
| | ExtremeSwitching X620 | 15 |
| | ExtremeSwitching X440-G2 | 47 |
| | 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 X465, X590, X690, X695 | 1,024 |
| | ExtremeSwitching X450-G2 | 512 |
| | ExtremeSwitching X620 | 510 |
| | ExtremeSwitching X440-G2 | 255 |
| VLAN translation —maximum number of translation VLAN pairs in an L2-only environment. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 2,046 |
| | ExtremeSwitching X440-G2, X620 | 255 |
| 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, | 12,000 |
| | ExtremeSwitching X590, X465, X690 | 24,000 |
| 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 X460-G2, X450-G2, X440-G2, X620, X590, X465, X690, X695 | 10 with 100 DACLs |
| | | |
| XNV authentication —maximum number of VMs that can be processed (combination of local and network VMs). | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 2,048 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 1,024 |

Table 10: Supported Limits for Edge License (continued)

| Metric | Product | Limit |
|---|--|-----------------------------|
| XNV database entries — maximum number of VM database entries (combination of local and network VMs). | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 16,000 |
| XNV database entries — maximum number of VPP database entries (combination of local and network VPPs). | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 2,048 |
| XNV dynamic VLAN — Maximum number of dynamic VLANs created (from VPPs /local VMs). | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 2,048 |
| XNV local VPPs — maximum number of XNV local VPPs. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 2,048 ingress 512 egress |
| XNV policies/dynamic ACLs —maximum number of policies/dynamic ACLs that can be configured per VPP. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 ingress 4 egress |
| XNV network VPPs — maximum number of XNV network VPPs. ^P | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 2,048 ingress 512 egress |

Advanced Edge License Limits

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

Table 11: Supported Limits for Advanced Edge License

| Metric | Product | Limit |
|--|---|--------|
| BGP auto-peering — maximum number of auto-peering nodes and VTEPs. | ExtremeSwitching X590, X465, X690, X695 | 64 |
| BGP auto-peering attached IPv4 hosts — maximum number of attached IPv4 hosts. | ExtremeSwitching X590, X465, X690, X695 | 64,000 |
| BGP auto-peering attached IPv6 hosts — maximum number of attached IPv6 hosts. | ExtremeSwitching X590, X465, X690, X695 | 8,000 |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|---|--|-----------------|
| 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 X590, X465, X690, X695 | 16* |
| BGP auto-peering maximum IPv4 prefixes with ECMP —Maximum number of IPv4 Network prefixes with ECMP. | ExtremeSwitching X590, X465, X690, X695 | 64,000 |
| BGP auto-peering maximum IPv6 prefixes with ECMP —Maximum number of IPv6 Network prefixes with ECMP. | ExtremeSwitching X590, X465, X690, X695 | 8,000 |
| BGP auto-peering MLAG peers —maximum MLAG peers per AutoBGP node. | ExtremeSwitching X590, X465, X690, X695 | 1 |
| BGP auto-peering VRFs —maximum number of VRFs. | ExtremeSwitching X590, X465, X690, X695 | 64 |
| BGP auto-peering EVPN instances —maximum EVPN instances. | ExtremeSwitching X590, X465, X690, X695 | 1,024 |
| EAPS domains —maximum number of EAPS domains. Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains. | ExtremeSwitching X590, X465, X690, X695 ExtremeSwitching X450-G2, X460-G2 ExtremeSwitching X440-G2, X620 | 128 64 32 |
| EAPsv2 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X440-G2, X620 ExtremeSwitching X590, X465, X690, X695 | 500 2,000 |
| ERPS domains —maximum number of ERPS domains without CFM configured. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 32 |
| ERPS domains —maximum number of ERPS domains with CFM configured. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 32 |
| ERPSv1 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 ExtremeSwitching X620, X440-G2 | 2,000 1,000 |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|--|---------|
| ERPSv2 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 2,000 |
| | ExtremeSwitching X620, X440-G2 | 500 |
| ESRP groups —maximum number of ESRP groups | ExtremeSwitching X450-G2, X460-G2, X440-G2, X620, X590, X465, X690, X695 | 32 |
| ESRP domains —maximum number of ESRP domains. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 64 |
| ESRP L2 VLANs —maximum number of ESRP VLANs without an IP address configured. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 1,000 |
| ESRP L3 VLANs —maximum number of ESRP VLANs with an IP address configured. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 511 |
| ESRP (maximum ping tracks) —maximum number of ping tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| ESRP (IP route tracks) —maximum IP route tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X695 | 8 |
| ESRP (VLAN tracks) —maximum number of VLAN tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 1 |
| L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch —maximum number of VCCV enabled VPLS VPNs. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 16 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |
| L2 VPN: VPLS MAC addresses —maximum number of MAC addresses learned by a switch. | ExtremeSwitching X590, X465, X690, X695 | 140,000 |
| | ExtremeSwitching X460-G2 | 55,000 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |
| L2 VPN: VPLS VPNs —maximum number of VPLS virtual private networks per switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 1,023 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |
| L2 VPN: VPLS peers —maximum number of VPLS peers per VPLS instance. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|--|-------|
| L2 VPN: LDP pseudowires —maximum number of pseudowires per switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 7,000 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |
| L2 VPN: static pseudowires —maximum number of static pseudowires per switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 7,000 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |
| L2 VPN: Virtual Private Wire Service (VPWS) VPNs —maximum number of virtual private networks per switch. | ExtremeSwitching X590, X465, X690, X695 | 4,090 |
| | ExtremeSwitching X460-G2 | 1,023 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | N/A |
| MPLS RSVP-TE interfaces —maximum number of interfaces. | ExtremeSwitching X460-G2, X590, X465,, X690, X695, | 32 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs. | ExtremeSwitching X460-G2, X590,, , X465, X690, X695 | 2,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS RSVP-TE egress LSPs —maximum number of egress LSPs. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 2,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS RSVP-TE transit LSPs —maximum number of transit LSPs. | ExtremeSwitching X460-G2, | 2,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS RSVP-TE paths —maximum number of paths. | ExtremeSwitching X460-G2 | 1,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 2,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS RSVP-TE profiles —maximum number of profiles. | ExtremeSwitching X460-G2 | 1,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 2,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS RSVP-TE EROs —maximum number of EROs per path. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X450-G2, and ExtremeSwitching X440-G2, X620 | N/A |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|---|-------|
| MPLS LDP peers —maximum number of MPLS LDP peers per switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 128 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS LDP adjacencies —maximum number of MPLS LDP adjacencies per switch. | ExtremeSwitching X460-G2 | 50 |
| | ExtremeSwitching X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS LDP ingress LSPs —maximum number of MPLS LSPs that can originate from a switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 2,048 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS LDP-enabled interfaces —maximum number of MPLS LDP configured interfaces per switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 128 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS LDP transit LSPs —maximum number of MPLS transit LSPs per switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS LDP egress LSPs —maximum number of MPLS egress LSPs that can terminate on a switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS static egress LSPs —maximum number of static egress LSPs. | ExtremeSwitching X460-G2 | 7,116 |
| | ExtremeSwitching X590, X465, X690, X695 | 8,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS static ingress LSPs —maximum number of static ingress LSPs. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| MPLS static transit LSPs —maximum number of static transit LSPs | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | N/A |
| OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X620 | 4 |
| | ExtremeSwitching X440-G2 | N/A |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|---|--|--------|
| OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 8 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB. | ExtremeSwitching X590, X465, X690, X695 | 10,000 |
| | ExtremeSwitching X460-G2 | 5,000 |
| | 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 X590, X465, X690, X695 | 2,000 |
| | ExtremeSwitching X460-G2 | 2,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 1,000 |
| OSPFv2 inter-vr or leaking routes —recommended maximum number of inter-vr routes contained in an OSPF LSDB. | ExtremeSwitching X590, X465, X690, X695, X460-G2 | 2,000 |
| | 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, X620, X440-G2, X590, X465, X690, X695 | 4 |
| OSPFv2 links —maximum number of links in the router LSA. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 400 |
| | ExtremeSwitching X450-G2, X620, X440-G2 | 4 |
| OSPFv2 neighbors —maximum number of supported OSPF adjacencies. | ExtremeSwitching X450-G2, X460-G2, X440-G2, X620, X590, X465, X690, X695 | 4 |
| OSPFv2 routers in a single area —recommended maximum number of routers in a single OSPF area. | ExtremeSwitching X590, X465, X690, X695 | 100 |
| | ExtremeSwitching X460-G2 | 50 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| OSPFv2 virtual links —maximum number of supported OSPF virtual links. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 32 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| OSPFv3 areas —as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching X590, X465, X690, X695 | 100 |
| | ExtremeSwitching X460-G2 | 16 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|---|--|--|
| OSPFv3 external routes —recommended maximum number of external routes. | ExtremeSwitching X460-G2,X590, X465, X690, X695 | 10,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 1,200 |
| OSPFv3 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes. | ExtremeSwitching X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X460-G2 | 3,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 500 |
| OSPFv3 interfaces —maximum number of OSPFv3 interfaces (active interfaces only). | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X465, X690, X695 | 4 |
| OSPFv3 neighbors —maximum number of OSPFv3 neighbors. | ExtremeSwitching X450-G2, X460-G2,X440-G2, X620, X590, X465, X695 | 4 |
| OSPFv3 virtual links —maximum number of OSPFv3 virtual links supported. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 16 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| PIM IPv4 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching X460-G2, X450-G2,X440-G2, X620, X590, X465, X690, X695 | 4 |
| PIM IPv4 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 180 |
| PIM IPv4 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 3,000 (depends on policy file limits) |
| PIM IPv4 Limits —maximum number of multicast sources per group. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 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, X620, X440-G2, X590, X465, X690, X695 | 145 |
| PIM IPv4 Limits —static rendezvous points. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 32 |
| PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching X460-G2, X450-G2,X440-G2, X620, X590 , X465, X690, X695 | 4 |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|---|--|
| PIM IPv6 Limits —maximum number of multicast sources per group. | ExtremeSwitching X460-G2, X590 , X465, X690, X695 | 1,750 |
| | ExtremeSwitching X450-G2 | 1,500 |
| | ExtremeSwitching X440-G2, X620 | 550 |
| PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 70 |
| PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 3,000 (depends on policy file limits) |
| PIM IPv6 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 64 |
| PIM IPv6 Limits —maximum number of secondary addresses per interface. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590 , X465, X690, X695 | 70 |
| PIM IPv6 Limits —static rendezvous points. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590 , X465, X690, X695 | 32 |
| Port-specific VLAN tags —maximum number of port-specific VLAN tags. | ExtremeSwitching X460-G2, X590 , X465, X690 | 1,023 |
| | ExtremeSwitching X450-G2, X440-G2, X620, X695 | N/A |
| Port-specific VLAN tags —maximum number of port-specific VLAN tag ports. | ExtremeSwitching X460-G2, X590, X465, X690 | 4,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620, X695 | N/A |
| VLAN Port Interfaces (VPIF) —maximum number of VLAN port interfaces. | ExtremeSwitching X460-G2 | 65,536 |
| | ExtremeSwitching X465, X590, X690, X695 | 131,585 |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|--|-------|
| 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 X460-G2, X450-G2, X590, X465, X690, X695 | 511 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| | Scaled Mode (with groups): ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 2,048 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| 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 X460-G2, X450-G2, X590, X465, X690, X695 | 511 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| | Scaled Mode (with groups): ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 2,048 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| VRRP (v2/v3-IPv4/IPv6) (maximum VRID) —maximum number of unique VRID numbers per switch. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X465, X690, X695 Note: With Advanced Edge license or higher. | 255 |
| VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN) —maximum number of VRIDs per VLAN. | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620, X590, X465, X690, X695 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, X620, X440-G2, X590, X465, X690, X695 Note: With Advanced Edge license or higher. | 8 |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|---|---|
| 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, X620, X440-G2, X590, X465, X690, X695 | 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, X620, X440-G2, X590, X465, X690, X695 | 8 (20 centisecond or 1 second hello interval) |
| VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks) —maximum number of IP route tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| VRRP (v2/v3-IPv4/IPv6) —maximum number of VLAN tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2, X590, X465, X690, X695 | 8 |
| VXLAN —maximum virtual networks. Note: Every VPLS instance/PSTag VLAN reduces this limit by 1. 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 X590, X465, X690, X695 ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | 2,048–4,000 N/A |
| VXLAN —maximum tenant VLANs plus port combinations Note: Every (VPLS/PSTag VLAN) + port reduces the limit by 1. | ExtremeSwitching X590, X465, X690, X695 ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | 4,096 N/A |

Table 11: Supported Limits for Advanced Edge License (continued)

| Metric | Product | Limit |
|--|--|--------|
| VXLAN —maximum static MAC to IP bindings. Note: Every FDB entry configured reduces this limit by 1. | ExtremeSwitching X590, X465, X690, X695 | 64,000 |
| | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | N/A |
| VXLAN —maximum RTEP IP addresses | ExtremeSwitching X590, X465, X690, X695 | 512 |
| | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | N/A |
| VXLAN —maximum virtual networks with dynamic learning and OSPF extensions for VXLAN | ExtremeSwitching X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | N/A |
| VXLAN —or replicator role, maximum number of attached leafs per switch. | ExtremeSwitching X465, X590,, X690, X695 | 256 |

Core License Limits

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

Table 12: Supported Limits for Core License

| Metric | Product | Limit |
|--|--|-------|
| Anycast RP Using PIM —maximum number of IPv4 Anycast RP set per VR. | ExtremeSwitching X440-G2, X450-G2, X460-G2, X620, X590, X465, X690, X695 | 32 |
| Anycast RP Using PIM —maximum number of IPv6 Anycast RP set per VR. | ExtremeSwitching X440-G2, X450-G2, X460-G2, X620, X590, X465, X690, X695 | 32 |
| Anycast RP Using PIM —RP peers per Anycast RP set. | ExtremeSwitching X440-G2, X450-G2, X460-G2, X620, X590, X465, X690, X695 | 10 |
| BGP (aggregates) —maximum number of BGP aggregates. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 256 |
| | ExtremeSwitching X450-G2 | 204 |
| BGP (networks) —maximum number of BGP networks. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 1,024 |
| | ExtremeSwitching X450-G2 | 820 |

Table 12: Supported Limits for Core License (continued)

| Metric | Product | Limit |
|--|---|------------------------|
| 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 | 128 |
| | ExtremeSwitching X590, X465, X690, X695 | 300 |
| | ExtremeSwitching X450-G2 | 100 |
| BGP (peer groups) —maximum number of BGP peer groups. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X450-G2 | 50 |
| BGP (policy entries) —maximum number of BGP policy entries per route policy. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 256 |
| | ExtremeSwitching X450-G2 | 204 |
| BGP (policy statements) —maximum number of BGP policy statements per route policy. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 1,024 |
| | ExtremeSwitching X450-G2 | 820 |
| BGP multicast address-family routes —maximum number of multicast address-family routes. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 25,000 |
| | ExtremeSwitching X450-G2 | 20,000 |
| BGP (unicast address-family routes) —maximum number of unicast address-family routes. | ExtremeSwitching X460-G2, X590, X465, X695 (at default) | 25,000 |
| | ExtremeSwitching X590, X465 (with ALPM enabled) | 100,000 |
| | ExtremeSwitching X450-G2 | 20,000 |
| BGP (non-unique routes) —maximum number of non-unique BGP routes. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 25,000 |
| | ExtremeSwitching X450-G2 | 20,000 |
| BGP ECMP —maximum number of equal cost paths per multipath for BGP and BGPv6. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 2, 4, 8, 16, 32, or 64 |
| | ExtremeSwitching X450-G2 | 64 |
| BGPv6 (unicast address-family routes) —maximum number of unicast address family routes. | ExtremeSwitching X460-G2 | 6,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 10,000 |
| | ExtremeSwitching X450-G2 | 4,800 |

Table 12: Supported Limits for Core License (continued)

| Metric | Product | Limit |
|--|---|------------|
| BGPv6 (non-unique routes) —maximum number of non-unique BGP routes. | ExtremeSwitching X460-G2 | 18,000 |
| | ExtremeSwitching X590, X465, X690, X695 | 24,000 |
| | ExtremeSwitching X450-G2 | 14,000 |
| EVPN EVI instances —maximum number of EVI instances. | ExtremeSwitching X590, X465, X690, X695 | 1,024 |
| EVPN LAGs —maximum number of LAGs. | ExtremeSwitching X590, X465, X690, X695 | 128 |
| GRE Tunnels —maximum number of GRE tunnels. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 255 |
| | ExtremeSwitching X620, X440-G2 | N/A |
| IS-IS adjacencies —maximum number of supported IS-IS adjacencies. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 128 |
| | ExtremeSwitching X450-G2 | N/A |
| IS-IS ECMP —maximum number of equal cost paths per multipath for IS-IS. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 2, 4, or 8 |
| | ExtremeSwitching X450-G2 | N/A |
| IS-IS interfaces —maximum number of interfaces that can support IS-IS. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 25,000 |
| | ExtremeSwitching X450-G2 | N/A |
| IS-IS IPv4 L2 routes —recommended maximum number of IS-IS Level 2 routes. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 25,000 |
| | ExtremeSwitching X450-G2 | N/A |
| 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, X590, X465, X690, X695 | 20,000 |
| | ExtremeSwitching X450-G2 | N/A |

Table 12: Supported Limits for Core License (continued)

| Metric | Product | Limit |
|--|---|--------|
| 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, X590, X465, X690, X695 | 10,000 |
| | ExtremeSwitching X450-G2 | N/A |
| IS-IS IPv6 L2 routes —recommended maximum number of IS-IS Level 2 routes. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 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, X590, X465, X690, X695 | 20,000 |
| | ExtremeSwitching X450-G2 | N/A |
| MSDP active peers —maximum number of active MSDP peers. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 64 |
| MSDP SA cache entries —maximum number of entries in SA cache. | ExtremeSwitching X590, X465, X690, X695 | 14,000 |
| | ExtremeSwitching X450-G2 | 8,000 |
| | ExtremeSwitching X460-G2 | 10,000 |
| MSDP maximum mesh groups —maximum number of MSDP mesh groups. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 16 |

Table 12: Supported Limits for Core License (continued)

| Metric | Product | Limit |
|---|---|--------|
| OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3. | ExtremeSwitching X460-G2, X450-G2, X590, X465, X690, X695 | 64 |
| OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 8 |
| OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB. | ExtremeSwitching X590, X465, X690, X695 | 10,000 |
| | ExtremeSwitching X460-G2 | 5,000 |
| | ExtremeSwitching X450-G2 | 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 X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X460-G2 | 2,000 |
| | ExtremeSwitching X450-G2 | 1,600 |
| OSPFv2 inter-vr or leaking routes —recommended maximum number of inter-vr routes contained in an OSPF LSDB. | ExtremeSwitching X590, X465, X690, X695, X460-G2 | 2,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 1,000 |
| OSPFv2 interfaces —recommended maximum number of OSPF interfaces on a switch (active interfaces only). | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 400 |
| | ExtremeSwitching X450-G2 | 320 |
| OSPFv2 links —maximum number of links in the router LSA. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 400 |
| | ExtremeSwitching X450-G2 | 320 |
| OSPFv2 neighbors —maximum number of supported OSPF adjacencies. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 128 |
| | ExtremeSwitching X450-G2 | 96 |
| OSPFv2 routers in a single area —recommended maximum number of routers in a single OSPF area. | ExtremeSwitching X590, X465, X690, X695 | 100 |
| | ExtremeSwitching X460-G2 | 50 |
| | ExtremeSwitching X450-G2 | 40 |
| OSPFv2 virtual links —maximum number of supported OSPF virtual links. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 32 |
| | ExtremeSwitching X450-G2 | 25 |
| OSPFv3 areas —as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching X590, X465, X690, X695 | 100 |
| | ExtremeSwitching X460-G2 | 16 |
| | ExtremeSwitching X450-G2 | 12 |

Table 12: Supported Limits for Core License (continued)

| Metric | Product | Limit |
|---|---|--|
| OSPFv3 external routes —recommended maximum number of external routes. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 10,000 |
| | ExtremeSwitching X450-G2 | 7,500 |
| OSPFv3 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes. | ExtremeSwitching X590, X465, X690, X695 | 4,000 |
| | ExtremeSwitching X460-G2 | 3,000 |
| | ExtremeSwitching X450-G2 | 500 |
| OSPFv3 interfaces —maximum number of OSPFv3 interfaces (active interfaces only). | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 256 |
| | ExtremeSwitching X450-G2 | 192 |
| OSPFv3 neighbors —maximum number of OSPFv3 neighbors. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 64 |
| | ExtremeSwitching X450-G2 | 48 |
| OSPFv3 virtual links —maximum number of OSPFv3 virtual links supported. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 16 |
| | ExtremeSwitching X450-G2 | 12 |
| PIM IPv4 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 255 |
| PIM IPv4 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 180 |
| PIM IPv4 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 3,000 (depends on policy file limits) |
| PIM IPv4 Limits —maximum number of multicast sources per group. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 5,000 |
| PIM IPv4 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 145 |
| PIM IPv4 Limits —static rendezvous points. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 32 |
| PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 255 |

Table 12: Supported Limits for Core License (continued)

| Metric | Product | Limit |
|--|---|--|
| PIM IPv6 Limits —maximum number of multicast sources per group. | ExtremeSwitching X460-G2, X590, X465, X690, X695 | 1,750 |
| | ExtremeSwitching X450-G2 | 1,500 |
| PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 70 |
| PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 3,000 (depends on policy file limits) |
| PIM IPv6 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 64 |
| PIM IPv6 Limits —maximum number of secondary addresses per interface. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 70 |
| PIM IPv6 Limits —static rendezvous points. | ExtremeSwitching X450-G2, X460-G2, X590, X465, X690, X695 | 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 I2".
- ^h Based on "configure forwarding internal-tables more I3-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.

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- 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 13-and-ipmc` or `configure forwarding internal-tables 12-and-13`.



Open Issues, Known Behaviors, and Resolved Issues

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[Resolved Issues in ExtremeXOS and Switch Engine 31.7](#) on page 100

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

The following are new open issues for supported features found in version 31.7.3:

Table 13:

| Defect Number | Description |
|----------------|---|
| General | |
| EXOS-35442 | SNMPv3 Informs will work only if the user is configured with the authoritative engine ID, which is the engine ID of the Inform receiver. This impacts only SNMPv3 and not SNMPv2 Informs. |
| EXOS-35443 | SNMP Informs will be counted along with traps in the <code>show snmp vr vr-name</code> command. |
| EXOS-35778 | The <code>show snmpv3 counters</code> command will not provide statistics on SNMPv3 errors. |

Known Behaviors

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

Table 14: 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. |
| 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 5320 Series Switches | |

Table 14: Known Issues, Platform-Specific, and Feature Change Requests (CRs) (continued)

| Defect Number | Description |
|--------------------------------|--|
| 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-29256 | The show port config command incorrectly displays the stacking ports speeds as "100G" after the stack ports have been configured for SummitStack V160 (40G) and the switch has been restarted. Note: This issue has no impact on stacking operation. |
| 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 31.7.3-Patch1-44

The following issues were resolved in ExtremeXOS 31.7.3-Patch1-44. Version 31.7.3-Patch1-44 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 15: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.3-Patch1-44

| Defect Number | Description |
|----------------|---|
| General | |
| CFD-11549 | ARP packets are not forwarded properly in the stack which has X695 and X690 platforms. |
| CFD-11469 | Policy is disabled after switch restarts. |
| CFD-11894 | SNMP memory leak is seen after polling. |
| CFD-11971 | Rest set failed error noticed in NAC when trying to re-enforce the policy rules to the G2 platform switches. |
| CFD-12031 | The <code>show switch management</code> command output is slow and sometimes results in the SNMP timeout. |
| CFD-11370 | The ELRP process crashes when ELRP with Hardware assist is enabled and is run on a VLAN that has more than 128 ports. |
| CFD-11654 | Scheduled restart is not working as scheduled when the SNTP-client updates the switch time dynamically. |
| EXOS-36379 | Process <code>snmpMaster</code> crashes with signal 6 which causes a switch restart. |

Resolved Issues in ExtremeXOS and Switch Engine 31.7.3-Patch1-31

The following issues were resolved in ExtremeXOS 31.7.3-Patch1-31. Version 31.7.3-Patch1-31 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 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.3-Patch1-31

| Defect Number | Description |
|----------------|--|
| General | |
| CFD-10748 | ELRP wrongly detects a loop when both the tenant VLAN and non-tenant VLAN are present in the ISC port. |
| CFD-11097 | L2VPN service name with 32 characters can hang a CLI session. |
| CFD-11240 | MVRP VLAN is not check-pointed to the MLAG peer when the corresponding remote MLAG port is inactive. |

Table 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.3-Patch1-31 (continued)

| Defect Number | Description |
|---------------|--|
| CFD-11262 | Port ID is incorrectly displayed when polling the dot1d port table. |
| CFD-11448 | CLI session freezes after executing a few CLI commands in ExtremeXOS switches. |
| CFD-11451 | When DHCP-Snooping is configured only on a PVLAN edge-port, DHCP bindings are not populated properly. |
| CFD-11453 | Memory leak occurs in SNMPD process due to failed requests. |
| EXOS-36233 | When multiple actions are configured in the UDP forwarding profile, only the first entry's forwarding actions are carried out despite the received packet matching multiple entries. |

Resolved Issues in ExtremeXOS and Switch Engine 31.7.3-Patch1-21

The following issues were resolved in ExtremeXOS 31.7.3-Patch1-21. Version 31.7.3-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 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.3-Patch1-21

| Defect Number | Description |
|----------------|--|
| General | |
| EXOS-35869 | Dot1x clients are randomly admin-reset as soon as they are authenticated. |
| CFD-11165 | Memory leak is observed in VLAN process when there are port flaps. |
| CFD-11023 | Polling the dot1dTpFdbTable information through SNMP returns the value with an additional octet. |
| CFD-11020 | Switch started to respond for ARP requests with source MAC address as all zeros' or VRRP MAC. |
| CFD-10997 | SSH key becomes invalid sometimes during the reboot of the switch |
| CFD-10948 | Error message is not generated when there are failures in installing ACL rules enforced from XIQ-SE though policy profile. |
| CFD-10947 | unconfigure switch all does not remove the configure system port notation setting |

Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.3-Patch1-21 (continued)

| Defect Number | Description |
|--------------------|---|
| CFD-10939 | Resource leak was seen in the hardware when deleting all ports in a vlan. |
| CFD-10938 | XML-Notification was not sent with the configured source IP. |
| CFD-10937 | .cfg file transferred to switch not available for use until reboot or copied to another file. |
| CFD-10933 | CLI session hangs when applying PBR policy whose filename is of 32 characters and when filename exceeds 32 characters, then policy check fails. |
| CFD-10932 | IDmgr critical log was seen when flapping the port with 1000+ dynamically created vlan's. |
| CFD-10925 | User list in Chalet becomes empty/blank when the number of users is one |
| CFD-10850 | ACL process crash was seen when applying a policy with match condition ospf on the VLAN. |
| SummitStack | |
| EXOS-35858 | Random slot failures are observed in EXOS stacks when it receives pause frames on its front panel ports. |
| EXOS-35821 | Random slot failures are observed in EXOS stacks when there are high number of slow-path traffic. |
| EXOS-35829 | snmpMaster crash seen in 5420 stack during save/reboot with qos actions in IPP. |
| 5420 | |
| EXOS-35868 | On the multi-rate ports of a 5420 switch, the link occasionally comes up at 100M after a link flap |

Resolved Issues in ExtremeXOS and Switch Engine 31.7.3

The following issues were resolved in ExtremeXOS 31.7.3. Version 31.7.3 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 18: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.3

| Defect Number | Description |
|----------------|---|
| General | |
| CFD-10643 | Netlogin allowed-users setting is not working as expected. |
| CFD-10644 | Policy files imported using the <code>download url</code> command are not synced to the Backup node on Summit Stack switches. |
| EXOS-35548 | Occasionally the 25G and 10G links flap multiple times after restarting. |

Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-75

The following issues were resolved in ExtremeXOS 31.7.2-Patch1-75. Version 31.7.2-Patch1-75 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 19: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-75

| Defect Number | Description |
|--------------------------------|---|
| General | |
| CFD-10136 | Access-list policy rules containing TCP/UDP port range and IP address are not configured properly on the switch when enforced using ExtremeCloud IQ - Site Engine. |
| CFD-10461 | When a new dot1x client is authenticated on a port, the accounting stop is not sent for the old dot1x client and the accounting start is not sent for the new client. |
| CFD-10478 | rtmgr process crash occurs when enabling BFD on IPv6 prefix. |
| CFD-10509 | mcmgr process crash occurs when fast-leave is enabled and receiving a leave message. |
| CFD-10510 | MACsec ports were not active after switch restart. |
| CFD-10561 | Netlogin client not learned on the port after STP convergence. |
| CFD-10563 | A local file will be used to restore DHCP-binding information if the remote server is unreachable. |
| Extended Edge Switching | |

Table 19: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-75 (continued)

| Defect Number | Description |
|--------------------|--|
| CFD-10382 | The show tech-support command gets stuck at show vpx command with a specific configuration. |
| SummitStack | |
| CFD-10379 | Ports inserted with 100Fx# optics in the backup/standby nodes of a stack go down after restarting the nodes. |

Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-64

The following issues were resolved in ExtremeXOS 31.7.2-Patch1-64. Version 31.7.2-Patch1-64 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 20: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-64

| Defect Number | Description |
|----------------|---|
| General | |
| CFD-9407 | Switch brings up the ports when diagnostics tests are running. |
| CFD-9930 | ACL Signal 11 crash occurs when ACL is added from a script and the process crash causes a switch restart. |
| CFD-9931 | In certain scenarios, ARP entry is not refreshed after a MAC move. |
| CFD-9984 | Switch restarts because of a kernel crash. |
| CFD-10024 | The route does not become active after executing the disable/enable bgp command. |
| CFD-10025 | ExtremeXOS is not switching the route to L3VPN prefix when the configured static route goes down. |
| CFD-10026 | PMBR floods multicast streams into VLANs without subscribers. |
| CFD-10027 | Router-discovery configurations missing after disabling/enabling VRRP instance. |
| CFD-10028 | SCP should choose vr-default as default VRs for operations, for example, download, in platforms that do not have a dedicated management port. |
| CFD-10177 | SNMP traps were not getting generated when there is an IP Security ARP violation despite the corresponding configuration being present in the switch. |

Table 20: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-64 (continued)

| Defect Number | Description |
|--|--|
| CFD-10186 | VRRP hellos are dropped when they are forwarded over ISC. |
| CFD-10203 | Kernel oops occurs when VPLS pseudo-wire goes down. |
| CFD-10224 | FDB process crash occurs when polling fdb.ipNetToPhysicalEnt MIB. |
| EXOS-34819 | Several Extreme Networks certified optics are marked incorrectly as unsupported and also have link-related issues. |
| EXOS-34924 | NetTools.AllocRawSockFail error message displays when more VLANs are created/deleted dynamically over a period of time. |
| EXOS-35036 | EXPY process crash with signal 6 occurs. |
| EXOS-35117 | VPEX MLAG ring gets moved to severed state when excessive control packets are forwarded. |
| ExtremeSwitching X435 Series Switches | |
| CFD-10029 | ExtremeSwitching X435 switches send extremeOverheat traps despite device temperature being under the high temperature threshold. |
| ExtremeSwitching 5420 Series Switches | |
| EXOS-34746 | After a stack restart, a 25G port inserted with 10G 10301 optic transceiver goes down in Backup and Standby nodes. |
| ExtremeSwitching 5520 Series Switches | |
| CFD-10031 | Error message occurs when creating LAG with Primary and Backup node VIM ports. |
| SummitStack | |
| CFD-9922 | Image was not synced to the Standby node in the stack when copying the image by using SFTP put in the server. |
| CFD-10021 | On a stack, the Backup and Standby slot port configuration information is not returned when ExtremePortConfigTable is polled. |
| CFD-10022 | MLT session was not running after enable/disable jumbo-frames when ExtremeXOS stack is enabled with VPEX. |
| CFD-10219 | HAL process crash occurs when sending multicast packets to more than 33 BPEs, and when disabling/enabling the ports in a BPE. |
| EXOS-34968 | SNMP Mibs ifSpeed and ifHighSpeed are displayed in Gbps rather than bps for stack-ports. |

Resolved Issues in ExtremeXOS and Switch Engine 31.7.2-Patch1-38

The following issues were resolved in ExtremeXOS 31.7.2-Patch1-38. Version 31.7.2-Patch1-38 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 21: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 31.7.2-Patch1-38

| Defect Number | Description |
|--|---|
| General | |
| CFD-9556 | If command line prompting is disabled, the user cannot log out of the session. |
| CFD-9835 | Unable to remove PoE label command from configuration. |
| EXOS-33622 | STP fails to block loop when using policy admin profile. |
| EXOS-34463 | With the STP auto-edge feature, a port is detected as an "Edge" port but shown as "point-to-point". |
| EXOS-34464 | Global-rule option in the clear-flow ACL is not working. |
| EXOS-34558 | UPM profile event lost after restart. |
| EXOS-34559 | Validate user input before processing JSONRPC request. |
| EXOS-34560 | Prevent directory listing/access via HTTP/HTTPS service. |
| EXOS-34561 | Restrict access to ExtremeXOS or Switch Engine internal services. |
| EXOS-34562 | Set SameSite attribute appropriately for cookies set by HTTP/HTTPS service. |
| ExtremeSwitching X870 Series Switches | |
| EXOS-32952 | Prevent Forward-Error-Correction IEEE clause 91 (CL91) from being configured on 25G ports in ExtremeSwitching X870 switches as it is not supported. |
| ExtremeSwitching X695 Series Switches | |
| EXOS-34080 | Supported 100G optics are occasionally marked as unsupported if an unsupported optic is inserted in the previous port. |

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 22: 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 23: 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 24: 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 24: 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 24: 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 25: 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 25: 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 26: 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 26: 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 27: 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 27: 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 28: 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 29: 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 30: 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 30: 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. |