



# ExtremeXOS v33.4.1 Release Notes

New Features, Improvements, and Known Issues

9039282-00 Rev AA  
July 2025



Copyright © 2025 All rights reserved.

## Legal Notice

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

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

## Trademarks

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

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

For additional information on Extreme Networks trademarks, see: <https://www.extremenetworks.com/about-extreme-networks/company/legal/trademarks>

## Open Source Declarations

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

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



# Table of Contents

---

Abstract.....	V
<b>Preface.....</b>	<b>6</b>
Conventions.....	6
Text Conventions.....	6
Platform-Dependent Conventions.....	8
Terminology.....	8
Send Feedback.....	8
Help and Support.....	9
Subscribe to Product Announcements.....	9
<b>Overview.....</b>	<b>10</b>
<b>Security Information.....</b>	<b>11</b>
Linux Kernel.....	11
OpenSSL Version.....	11
<b>Upgrading ExtremeXOS.....</b>	<b>12</b>
<b>Newly Purchased Switches Require Software Upgrade.....</b>	<b>13</b>
<b>Default ExtremeXOS® Settings.....</b>	<b>14</b>
<b>Image File Names.....</b>	<b>17</b>
<b>New and Corrected Features.....</b>	<b>18</b>
BFD for PIM Support.....	18
Supported Platforms.....	18
Configurable Anycast RP Register Suppression Timer.....	18
Supported Platforms.....	18
Enhanced RADIUS Server Handling for dot1x EAP Authentication.....	19
Supported Platforms.....	19
IPv6 Rule - Match Condition Enhancement in ACL Style Policy.....	19
Supported Platforms.....	19
Lower the Minimum MTU Configuration to 1200 Bytes.....	19
.....	19
Message-Authenticator Attribute in RADIUS Authentication Packets.....	19
Supported Platforms.....	19
New Device Type in Instant Port.....	19
Supported Platforms.....	20
Reference Identifier for RADIUS TLS.....	20
Supported Platforms.....	20
Refresh RADIUS TLS After Certificate/Key Update.....	20
Supported Platforms.....	20
New CLI Command.....	20
STP BPDU BridgeID Extension Support.....	20

Supported Platforms.....	21
Modified CLI Command.....	21
TLS Certificate Download Using VR-Default and User-Defined VRs.....	21
Supported Platforms.....	21
Modified CLI Commands.....	21
VLAN Name-Based Configuration in RADIUS and TACACS.....	21
Supported Platforms.....	21
Modified CLI Commands.....	22
<b>ExtremeCloud IQ Agent Support.....</b>	<b>23</b>
<b>Extreme Hardware/Software Compatibility and Recommendation Matrices.....</b>	<b>25</b>
<b>Compatibility with Extreme Management Center.....</b>	<b>26</b>
<b>Supported MIBs.....</b>	<b>27</b>
<b>Tested Third-Party Products.....</b>	<b>28</b>
Tested RADIUS Servers.....	28
<b>Extreme Switch Security Assessment.....</b>	<b>29</b>
DoS Attack Assessment.....	29
ICMP Attack Assessment.....	29
Port Scan Assessment.....	29
<b>Limits.....</b>	<b>30</b>
Limits Overview.....	30
Value Edge License Limits.....	32
Edge License Limits.....	45
Advanced Edge License Limits.....	71
Core License Limits.....	80
Notes for Limits Tables.....	85
<b>Open Issues, Known Behaviors, and Resolved Issues.....</b>	<b>87</b>
Open Issues in ExtremeXOS 33.4.1.....	87
Known Behaviors.....	87
Resolved Issues in ExtremeXOS 33.4.1.....	88



# Abstract

---

This release note for ExtremeXOS version 33.4.1, published by Extreme Networks, Inc., released in July 2025, provides new feature and software information, scaling limits, and open and known deficiencies and resolved issues in version 33.4.1. The document provides details on hardware and software compatibility, default settings, image file names, supported platforms, and guidance for upgrading. Additionally, it outlines limits for various licenses and features in the software. The document details changes and corrections for features supported in version 33.3.1. Furthermore, the release notes highlight known behaviors and limitations in the system architecture, and they list numerous resolved issues across different patches, including improvements in security profile operation. The document serves as a comprehensive resource for technical readers seeking detailed insights into the functionality, compatibility, and performance improvements of the specified software version.



# Preface

---

Read the following topics to learn about:

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

## Conventions

---




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

### Text Conventions



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

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

**Table 1: Notes and warnings**

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

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

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

**Table 2: Text**

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

**Table 3: Command syntax**

Convention	Description
<b>bold text</b>	Bold text indicates command names, keywords, and command options.
<i>italic text</i>	Italic text indicates variable content.
[ ]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ <b>x</b>   <b>y</b>   <b>z</b> }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
<b>x</b>   <b>y</b>	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, such as passwords, are enclosed in angle brackets.

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

Convention	Description
...	Repeat the previous element, for example, <i>member[member...]</i> .
\	In command examples, the backslash indicates a “soft” line break. When a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

## Platform-Dependent Conventions

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

- ExtremeSwitching® switches
- SummitStack™

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

## Terminology

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

## Send Feedback

The User Enablement team at Extreme Networks has made every effort to ensure that this document is accurate, complete, and easy to use. We strive to improve our documentation to help you in your work, so we want to hear from you. We welcome all feedback, but we especially want to know about:

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

To send feedback, email us at [Product-Documentation@extremenetworks.com](mailto:Product-Documentation@extremenetworks.com).

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



## Help and Support

---

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

### Extreme Portal

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

### The Hub

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

### Call GTAC

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

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

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

## Subscribe to Product Announcements

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

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

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



# Overview

---

These release notes document ExtremeXOS added features and resolved software deficiencies for the title version.



# Security Information

---

[Linux Kernel](#) on page 11

[OpenSSL Version](#) on page 11

The following section covers important security information for ExtremeXOS 33.2.1.

## Linux Kernel

---

This version of ExtremeXOS uses Linux Kernel 5.10 for X465 and X695 series switches, and Linux Kernel 4.14 for all other switches.

## OpenSSL Version

---

This version of ExtremeXOS uses FIPS openssl-fips-3.0.10.



# Upgrading ExtremeXOS

---

For instructions about upgrading ExtremeXOS software, see *Software Upgrade and Boot Options* in [ExtremeXOS v33.2.1 User Guide](#).

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



## Note

New ExtremeSwitching X435 PoE switches with a Giga device MCU part (switch default ships with supported EXOS versions from the factory) will prevent the switch downgrade to older EXOS versions.

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

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

The switch can be identified for the inclusion of the Giga device MCU by checking the PoE firmware revision (5.0 or later) by entering the `show inline-power stats` command (line four):

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



# Newly Purchased Switches Require Software Upgrade

---

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

For information about upgrading the ExtremeXOS software, see the *ExtremeXOS Upgrade Process* topic in the *Software Upgrade and Boot Options* chapter of the [ExtremeXOS v33.2.1 User Guide](#).



# Default ExtremeXOS® Settings

The following table shows the default settings for ExtremeXOS starting with version 31.4, and shows any changes that have been made to these settings and in what version these changes were made.

**Table 4: Default ExtremeXOS Settings**

Feature	31.4 and earlier	31.5	31.6 and later
Account Lockout	After 3 consecutive login failures, account is locked for 5 minutes. <sup>a</sup>		
AVB	Disabled.		
BFD Strict Session Protection	Disabled.		
BGP	Disabled.		
Bluetooth	Enabled.		
BOOTP Relay	Disabled.		
CDP	Enabled.		
Configuration auto save	Disabled.		
Clear-flow	Disabled.		
Diagnostics	Admin level privileges required to show diagnostics. <sup>a</sup>		
DHCP	Disabled.		
DNS Cache Resolver and Analytics	Disabled.		
IPFIX	Disabled.		
IP NAT	Disabled.		
EAPS	Disabled.		
EDP	Enabled on management port.		
ELRP	Disabled.		
ESRP	Disabled.		

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

**Table 4: Default ExtremeXOS Settings (continued)**

Feature	31.4 and earlier	31.5	31.6 and later
Extended Edge Switching (VPEX)	Disabled.		
ExtremeCloud IQ	Enabled		
FEC	Disabled.		Enabled on Native 25Gb ports.
Identity Management	Disabled.		
IGMP	Enabled, set to IGMPv2 compatibility mode.		
IGMP Snooping	Enabled.		
Image Integrity Check	Disabled.		
IP Route Compression	Enabled.		
ISIS	Disabled.		
LLDP	Enabled.		
Log	Admin level privileges required to show log. <sup>a</sup>		
Logging memory buffer	Generate an event when the logging memory buffer exceeds 90% of capacity. <sup>a</sup>		
MAC Security	Disabled.		
MLD	Disabled.		
MLD Snooping	Disabled.		
MPLS	Disabled.		
MSRP	Disabled.		
MSTP	Enabled.		
NetLogin	All types of authentication are disabled.		
NTP	Disabled.		
ONEPolicy	Disabled.		
Policy rule model	Hierarchical (Unless upgrading from 30.5 with a saved configuration set to access list.)		
OpenFlow	Not supported.		
OSPF	Disabled.		

**Table 4: Default ExtremeXOS Settings (continued)**

Feature	31.4 and earlier	31.5	31.6 and later
OVSDB	Disabled.		
Passwords	Plain text password entry not allowed. <sup>a</sup>		
PIM	Disabled.		
PIM Snooping	Disabled.		
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. <sup>a</sup>		
SSH	Disabled.		
Stacking-support	Disabled, except for X450-G2, X465.		
Stacking auto-discovery	Enabled.		
STP	Enabled.		
Syslog	Disabled.		
TACACS	Disabled.		
Telnet	Disabled. <sup>a</sup>		Enabled.
VPEX IP Multicast Replication	Controlling Bridge		
VPLS	All newly created VPLS instances are enabled.		
Watchdog	Enabled.		
Web HTTP server	Enabled. <sup>a</sup>		
Web HTTPS server	Enabled. <sup>a</sup>		





## Image File Names

---

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

**Table 5: Image Types (Prefixes)**

Switches	Image File Type (Prefix)
X465	x465- Example: x465-33.3.1.21.xos
X695	onie- Example: onie-33.1.1.31.xos <b>Note:</b> These image files use the Open Network Install Environment (ONIE).
X440-G2, X450-G2, and X460-G2	summitX- Example: summitX-33.1.1.31.xos
X435	summitlite_arm- Example: summitlite_arm-30.5.0.102.xos



## New and Corrected Features

---

[BFD for PIM Support](#) on page 18  
[Configurable Anycast RP Register Suppression Timer](#) on page 18  
[Enhanced RADIUS Server Handling for dot1x EAP Authentication](#) on page 19  
[IPv6 Rule - Match Condition Enhancement in ACL Style Policy](#) on page 19  
[Lower the Minimum MTU Configuration to 1200 Bytes](#) on page 19  
[Message-Authenticator Attribute in RADIUS Authentication Packets](#) on page 19  
[New Device Type in Instant Port](#) on page 19  
[Reference Identifier for RADIUS TLS](#) on page 20  
[Refresh RADIUS TLS After Certificate/Key Update](#) on page 20  
[STP BPDU BridgeID Extension Support](#) on page 20  
[TLS Certificate Download Using VR-Default and User-Defined VRs](#) on page 21  
[VLAN Name-Based Configuration in RADIUS and TACACS](#) on page 21

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

### BFD for PIM Support

---

Version 33.4.1 adds support for Bidirectional Forwarding Detection (BFD) with Protocol Independent Multicast (PIM) across all Virtual Routers (VRs), including User VRs. This enhancement improves fault detection and network resilience in multicast routing environments.

#### Supported Platforms

All platforms.

### Configurable Anycast RP Register Suppression Timer

---

Version 33.4.1 adds support for configuring the Anycast Rendezvous Point (RP) register suppression timer. Previously fixed at a default of 60 seconds, the timer can now be set to values below 30 seconds to better support failover scenarios.

#### Supported Platforms

All platforms.

---

## Enhanced RADIUS Server Handling for dot1x EAP Authentication

---

Version 33.4.1 adds enhanced RADIUS server handling for dot1x EAP authentication. To reduce client authentication failures during EAP-based dot1x sessions, the switch now retransmits Access-Requests to the same RADIUS server that issued the original challenge, rather than failing over to a different server. This behavior applies only to authentication retransmissions over UDP and does not affect accounting or reauthentication mechanisms.

### Supported Platforms

All platforms.

---

## IPv6 Rule - Match Condition Enhancement in ACL Style Policy

---

Version 33.4.1 adds IPv6 support to ACL-style policies. This enhancement enables 5-tuple rule matching using IPv6 addresses in both static and dynamic ACLs. It also introduces NOS-API endpoints to support configuration and management of IPv6-based ACL rules, expanding policy flexibility for dual-stack environments.

### Supported Platforms

All platforms.

---

## Lower the Minimum MTU Configuration to 1200 Bytes

---

Version 33.4.1 adds support for lowering the minimum MTU configuration to 1,200 bytes. Previously restricted to a minimum of 1,500 bytes, this update enables configurations down to 1,200 bytes to support ExtremeCloud SD-WAN deployments. It resolves issues where EAP-TLS authentication failed due to oversized UDP frames within tunneled environments.

---

## Message-Authenticator Attribute in RADIUS Authentication Packets

---

Version 33.4.1 adds support for the Message-Authenticator attribute in RADIUS Access-Requests. This enhancement aligns with security advisory SA-2024-084 and ensures the attribute is included in requests for MAC authentication, CLI-based management authentication, and Chalet-based management authentication.

### Supported Platforms

All platforms.

---

## New Device Type in Instant Port

---

Version 33.4.1 adds Instant Port enhancements for interswitch detection. This update improves the Instant Port feature by enabling detection of multiple non-LAG links,

such as ports blocked by STP. It also introduces a new device type, "Extreme Networks Switch," which uses a match condition based on the `sysDescr` field. For example, a condition like `sysDescr contains "Fabric Engine"` will match devices reporting LLDP `sysDescr "Extreme Networks Fabric Engine"`.

## Supported Platforms

All platforms.

## Reference Identifier for RADIUS TLS

---

Version 33.4.1 adds support for validating RADIUS TLS server certificates using a reference identifier, enhancing compliance with Common Criteria requirements. This allows administrators to configure a reference identifier that is matched against the Subject Alternative Name (SAN) or Common Name (CN) in the server's certificate. This also ensures that the TLS session is only established if the identifier matches, improving security.

If the reference identifier configured does not match the SAN/CN of the peer certificate, the TLS session will not be established.

## Supported Platforms

All platforms.

## Refresh RADIUS TLS After Certificate/Key Update

---

Version 33.4.1 adds support for dynamically updating the TLS certificate used by RadSec without requiring a full unconfiguration and reconfiguration of the RADIUS service.

## Supported Platforms

All platforms.

## New CLI Command

The following command is introduced to support this feature:

```
refresh radius tls
```

## STP BPDU BridgeID Extension Support

---

Version 33.4.1 adds support for STP Bridge ID extension in compliance with IEEE 802.1t. This enhancement improves interoperability with third-party vendors by implementing the STP Bridge ID attribute as defined in the IEEE 802.1t standard.

## Supported Platforms

All platforms.

## Modified CLI Command

The following command is modified to support this feature:

```
configure stpd stpd_name priority priority {extended-system-id [use-carrier-vlan | ext_sys_id]}
```

 by adding the extended-system-id keyword with [**use-carrier-vlan** | *ext\_sys\_id*] options.

## TLS Certificate Download Using VR-Default and User-Defined VRs

---

Version 33.4.1 adds support for downloading TLS certificates using both VR-Default and user-defined virtual routers, in addition to the previously supported VR-Mgmt. This enhancement improves deployment flexibility in environments where out-of-band (OoB) management is not used.

## Supported Platforms

All platforms.

## Modified CLI Commands

The following command is modified to support this feature:

```
download ssl ipaddress certificate {ssl-cert | trusted-ca | ocsp-signature-ca | {csr-cert {ssh} {ocsp [on | off]}}
```

*file\_name* **vr** {*vr\_name*}

## VLAN Name-Based Configuration in RADIUS and TACACS

---

Version 33.4.1 adds the ability to specify a VLAN name or interface name—rather than a static management IP address—when configuring RADIUS and TACACS. This enhancement simplifies configuration management and reduces the need for manual updates when IP addresses change. In cases where a VLAN has multiple IP addresses, the primary IP address will be used.

- If the VLAN is not yet created, the configuration is accepted but marked as "Not In Service" until the VLAN and its IP are available.
- If a VLAN has multiple IPs:
  - For IPv4: the primary address is used.
  - For IPv6: the lowest address is used.
- Dynamic VLAN creation (for example, using ZTP+ or MVRP) is supported.

## Supported Platforms

All platforms.

## Modified CLI Commands

The **configure radius**, **configure radius-accounting**, **configure radius dynamic-authorization**, **configure tacas**, and **configure tacas-accounting** commands are modified to add the following syntax:

```
| client-vlan [vlan_name | future_vlan_name] {ipv4 | ipv6}]
```



# ExtremeCloud IQ Agent Support

This version of ExtremeXOS supports 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.



## Important

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

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

This version of ExtremeXOS was tested with ExtremeCloud IQ version 25.4.0-109.

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

**Table 6: Supported Platforms**

Switch Series	Switch Models
X435	X435-8T-4S X435-8P-4S X435-8P-2T-W X435-24T-4S X435-24P-4S
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

**Table 6: Supported Platforms (continued)**

Switch Series	Switch Models
X450-G2	X450-G2-24P-10GE X450-G2-48P-10GE X450-G2-24P-GE4 X450-G2-48P-GE4
X460-G2	X460-G2-24P-10GE4 X460-G2-48P-10GE4 X460-G2-16MP-32P-10GE4 X460-G2-24P-48HP-10GE4
X465	X465-48P X465-24MU-24W X465-24W X465-48W X465-24MU





# Extreme Hardware/Software Compatibility and Recommendation Matrices

---

*ExtremeXOS and Switch Engine Software Support* provides information about the minimum version of ExtremeXOS 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 ExtremeXOS versions for specific hardware platforms, see *ExtremeXOS and Switch Engine Release Recommendations*.

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



## Compatibility with Extreme Management Center

---

ExtremeXOS 33.2.1 is compatible with the version of Extreme Management Center shown in this table: [http://emc.extremenetworks.com/content/common/releasenotes/extended\\_firmware\\_support.htm](http://emc.extremenetworks.com/content/common/releasenotes/extended_firmware_support.htm).

This version was tested with ExtremeCloud IQ Site Engine versions 25.5.10.64.



## Supported MIBs

---

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

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

For detailed information on which MIBs and SNMP traps are supported, see the *Extreme Networks Proprietary MIBs* and *MIB Support Details* sections in the [ExtremeXOS v33.2.1 User Guide](#).



## Tested Third-Party Products

---

The following third-party products have been tested for ExtremeXOS 33.4.1.

### Tested RADIUS Servers

---

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS



# Extreme Switch Security Assessment

---

## DoS Attack Assessment

---

Tools used to assess DoS attack vulnerability:

- Network Mapper (NMAP)

## ICMP Attack Assessment

---

Tools used to assess ICMP attack vulnerability:

- SSPing
- Twinge
- Nuke
- WinFreeze

## Port Scan Assessment

---

Tools used to assess port scan assessment:

- Nessus



# Limits

- [Limits Overview](#) on page 30
- [Value Edge License Limits](#) on page 32
- [Edge License Limits](#) on page 45
- [Advanced Edge License Limits](#) on page 71
- [Core License Limits](#) on page 80
- [Notes for Limits Tables](#) on page 85

This chapter summarizes the supported limits in ExtremeXOS and Switch Engine 33.2.1.

## Limits Overview

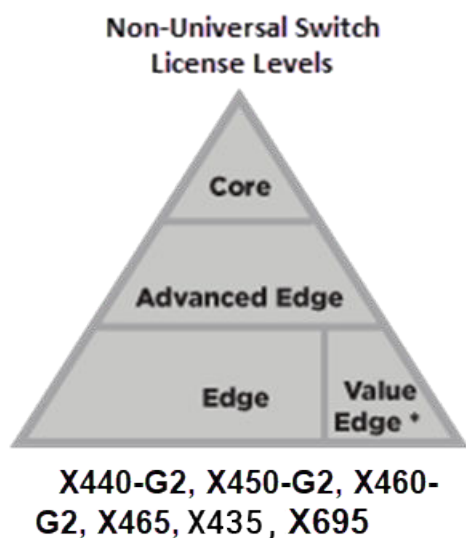
The limits data is grouped by license level that contains the associated features:

- [Value Edge License Limits](#) on page 32
- [Edge License Limits](#) on page 45
- [Advanced Edge License Limits](#) on page 71
- [Core License Limits](#) on page 80

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, X695	Value Edge *, Edge, Advanced Edge, Core
<b>Note:</b> * The X435 is the only switch that supports the Value Edge license level.		
<b>Note:</b> X590, X620-X (fiber), and X690 are not supported in this version.		

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.



\* Value Edge applies to X435 switches only

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

For more information about licenses, see [ExtremeXOS v33.2.1 Licensing Guide](#).

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 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 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 7: Supported Limits for Value Edge License**

Metric	Product	Limit
<b>AAA (local)</b> —maximum number of admin and local user accounts.	ExtremeSwitching X435	16
<b>Access lists (meters)</b> —maximum number of meters.	ExtremeSwitching X435	512 ingress
<b>Access lists (policies)</b> —suggested maximum number of lines in a single policy file.	ExtremeSwitching X435	300,000
<b>Access lists (policies)</b> —maximum number of rules in a single policy file. <sup>a</sup>	ExtremeSwitching X435	1,024 ingress
<b>Access lists (slices)</b> —number of ACL slices.	ExtremeSwitching X435	8 ingress only
<b>ACL Per Port Meters</b> —number of meters supported per port.	ExtremeSwitching X435	8
<b>ACL port ranges</b>	ExtremeSwitching X435	32
<b>Meters Packets-Per-Second Capable</b>	ExtremeSwitching X435	Yes
<b>AVB (audio video bridging)</b> —maximum number of active streams.	ExtremeSwitching X435	512
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per virtual router.	ExtremeSwitching X435	8
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per VLAN.	ExtremeSwitching X435	8
<b>BOOTP/DHCP relay</b> —maximum number of DHCPv4/v6 relay agents.	ExtremeSwitching X435	30
<b>Connectivity fault management (CFM)</b> —maximum number of CFM domains.	ExtremeSwitching X435	8
<b>CFM</b> —maximum number of CFM associations.	ExtremeSwitching X435	256
<b>CFM</b> —maximum number of CFM up end points.	ExtremeSwitching X435	32



**Table 7: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<b>CFM</b> —maximum number of CFM down end points.	ExtremeSwitching X435	32
<b>CFM</b> —maximum number of CFM remote end points per up/down end point.	ExtremeSwitching X435	2,000
<b>CFM</b> —maximum number of dot1ag ports.	ExtremeSwitching X435	128
<b>CFM</b> —maximum number of CFM segments.	ExtremeSwitching X435	1,000
<b>CFM</b> —maximum number of MIPs.	ExtremeSwitching X435	256
<b>DHCPv6 Prefix Delegation Snooping</b> —Maximum number of DHCPv6 prefix delegation snooped entries.	ExtremeSwitching X435	30 (with static routes)
<b>DHCP snooping entries</b> —maximum number of DHCP snooping entries.	ExtremeSwitching X435	30
<b>Dynamic ACLs</b> —maximum number of ACLs processed per second.  <b>Note:</b> Limits are load-dependent.	ExtremeSwitching X435 with 50 DACLs with 500 DACLs	10 5
<b>EAPS domains</b> —maximum number of EAPS domains.	ExtremeSwitching X435	4
<b>EAPSV1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X435	1,000
<b>ERPS domains</b> —maximum number of ERPS domains with or without CFM configured.	ExtremeSwitching X435	4
<b>ERPSv1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X435	1,000
<b>ELSM (vlan-ports)</b> —maximum number of VLAN ports.	ExtremeSwitching X435	2,000
<b>Forwarding rate</b> —maximum L3 software forwarding rate.	ExtremeSwitching X435	7,844 pps
<b>FDB (unicast blackhole entries)</b> —maximum number of unicast blackhole FDB entries.	ExtremeSwitching X435	16,019

**Table 7: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<b>FDB (multicast blackhole entries)</b> —maximum number of multicast blackhole FDB entries.	ExtremeSwitching X435	16,384
<b>FDB (maximum L2 entries)</b> —maximum number of MAC addresses.	ExtremeSwitching X435	16,384 <sup>9</sup>
<b>FDB (maximum L2 entries)</b> —maximum number of multicast FDB entries.	ExtremeSwitching X435	512
<b>Identity management</b> —maximum number of Blacklist entries.	ExtremeSwitching X435	512
<b>Identity management</b> —maximum number of Whitelist entries.	ExtremeSwitching X435	512
<b>Identity management</b> —maximum number of roles that can be created.	ExtremeSwitching X435	64
<b>Identity management</b> —maximum role hierarchy depth allowed.	ExtremeSwitching X435	5
<b>Identity management</b> —maximum number of attribute value pairs in a role match criteria.	ExtremeSwitching X435	16
<b>Identity management</b> —maximum number of child roles for a role.	ExtremeSwitching X435	8
<b>Identity management</b> —maximum number of policies/dynamic ACLs that can be configured per role.	ExtremeSwitching X435	8
<b>Identity management</b> —maximum number of LDAP servers that can be configured.	ExtremeSwitching X435	8
<b>Identity management</b> —maximum number of Kerberos servers that can be configured.	ExtremeSwitching X435	20
<b>Identity management</b> —maximum database memory size.	ExtremeSwitching X435	512

**Table 7: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<b>Identity management</b> —recommended number of identities per switch.  <b>Note:</b> Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	ExtremeSwitching X435	100
<b>Identity management</b> —recommended number of ACL entries per identity.  <b>Note:</b> Number of ACLs per identity, based on system ACL limitation.	ExtremeSwitching X435	20
<b>Identity management</b> —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file.	ExtremeSwitching X435	500
<b>IGMP snooping per VLAN filters</b> —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	ExtremeSwitching X435	500
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per port. <sup>n</sup>	ExtremeSwitching X435	2,500
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per switch. <sup>n</sup>	ExtremeSwitching X435	12,500
<b>IGMPv3 maximum source per group</b> —maximum number of source addresses per group.	ExtremeSwitching X435	250
<b>IGMPv3 subscriber</b> —maximum number of IGMPv3 subscribers per port. <sup>n</sup>	ExtremeSwitching X435	1,000
<b>IGMPv3 subscriber</b> —maximum number of IGMPv3 subscribers per switch. <sup>n</sup>	ExtremeSwitching X435	10,000

**Table 7: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<b>IP ARP entries in software</b> —maximum number of IP ARP entries in software.  <b>Note:</b> Might be limited by hardware capacity of FDB (maximum L2 entries).	ExtremeSwitching X435	20,424
<b>IPv4 ARP entries in hardware with minimum LPM routes</b> —maximum recommended number of IPv4 ARP entries in hardware, with minimum LPM routes present. Assumes number of IP route reserved entries is 100 or less.	ExtremeSwitching X435	509 <sup>h</sup>
<b>IPv4 ARP entries in hardware with maximum LPM routes</b> —maximum recommended number of IPv4 ARP entries in hardware, with maximum LPM routes present. Assumes number of IP route reserved entries is “maximum.”	ExtremeSwitching X435	500 <sup>h</sup>
<b>IPv4 remote hosts in hardware with zero LPM routes</b> —maximum recommended number of IPv4 remote hosts (hosts reachable through a gateway) in hardware when LPM routing is not used. Assumes number of IP route reserved entries is 0, and number of IPv4 ARP entries present is 100 or less.	ExtremeSwitching X435	3,100 <sup>h</sup>
<b>IPv4 routes</b> —maximum number of static IPv4 routes in software (combination of unicast and multicast routes).	ExtremeSwitching X435	32
<b>IPv4 routes (LPM entries in hardware)</b> — number of IPv4 routes in hardware.	ExtremeSwitching X435	32
<b>IPv6 addresses on an interface</b> —maximum number of IPv6 addresses on an interface.	ExtremeSwitching X435	15
<b>IPv6 addresses on a switch</b> —maximum number of IPv6 addresses on a switch.	ExtremeSwitching X435	15

**Table 7: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<b>IPv6 host entries in hardware</b> —maximum number of IPv6 neighbor entries in hardware.	ExtremeSwitching X435	500
<b>IPv6 routes in software</b> —maximum number of static IPv6 routes in software.	ExtremeSwitching X435	16
<b>IPv6 routes (LPM entries in hardware)</b> —maximum number of IPv6 routes in hardware.	ExtremeSwitching X435	16
<b>IP router interfaces</b> —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X435	30
<b>IP unicast static routes</b> —maximum number of permanent IP unicast routes.	ExtremeSwitching X435	32
<b>IP multinetting (secondary IP addresses)</b> —maximum number of secondary IP addresses per VLAN.	ExtremeSwitching X435	30
<b>Jumbo frames</b> —maximum size supported for jumbo frames, including the CRC.	ExtremeSwitching X435	9,216
<b>Layer-2 IPMC forwarding caches</b> —(IGMP/MLD/PIM snooping) in mac-vlan mode.  <b>Note:</b> <ul style="list-style-type: none"> <li>The internal lookup table configuration used is "l2-and-l3".</li> <li>IPv6 and IPv4 L2 IPMC scaling is the same for this mode.</li> <li>Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same.</li> </ul>	ExtremeSwitching X435	5,000

**Table 7: Supported Limits for Value Edge License (continued)**

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

**Table 7: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<b>MAC-based security</b> —maximum number of MAC-based security policies.	ExtremeSwitching X435	1,024
<b>MAC Locking</b> —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)
<b>Meters</b> —maximum number of meters.	ExtremeSwitching X435	512
<b>Maximum mirroring instances.</b>	ExtremeSwitching X435	1 (egress)
<b>Mirroring (filters)</b> —maximum number of mirroring filters.  <b>Note:</b> This is the number of filters across all the active mirroring instances.	ExtremeSwitching X435	128
<b>Mirroring, one-to-many (filters)</b> —maximum number of one-to-many mirroring filters.  <b>Note:</b> This is the number of filters across all the active mirroring instances.	ExtremeSwitching X435	128
<b>Mirroring, one-to-many (monitor port)</b> —maximum number of one-to-many monitor ports.	ExtremeSwitching X435	1
<b>Multicast listener discovery (MLD) snooping per-VLAN filters</b> —maximum number of VLANs supported in per-VLAN MLD snooping mode.	ExtremeSwitching X435	63
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per port. <sup>n</sup>	ExtremeSwitching X435	2,500
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per switch. <sup>n</sup>	ExtremeSwitching X435	12,500

**Table 7: Supported Limits for Value Edge License (continued)**

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



**Table 7: Supported Limits for Value Edge License (continued)**

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

**Table 7: Supported Limits for Value Edge License (continued)**

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

**Table 7: Supported Limits for Value Edge License (continued)**

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

**Table 7: Supported Limits for Value Edge License (continued)**

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

**Table 7: Supported Limits for Value Edge License (continued)**

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

## Edge License Limits

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



### Note

X590, X620-X (fiber), and X690 are not supported in this version.

**Table 8: Supported Limits for Edge License**

Metric	Product	Limit
<b>AAA (local)</b> —maximum number of admin and local user accounts.	All platforms, except X435	16
<b>Access lists (meters)</b> —maximum number of meters.	ExtremeSwitching X440-G2	1,024 ingress 256 egress
	ExtremeSwitching X450-G2, X460-G2	1,024 ingress 512 egress
	ExtremeSwitching X465	2,048 ingress 512 egress
	ExtremeSwitching X695	6,000 ingress 2,000 egress
<b>Access lists (policies)</b> —suggested maximum number of lines in a single policy file.	All platforms, except X435	300,000
<b>Access lists (policies)</b> —maximum number of rules in a single policy file. <sup>a</sup>	ExtremeSwitching X460-G2, X450-G2	4,096 ingress 1,024 egress
	ExtremeSwitching X440-G2	2,048 ingress 512 egress
	ExtremeSwitching X465, X695	8,192 ingress 1,024 egress

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

Metric	Product	Limit
<b>Access lists (policies)</b> —maximum number of rules in a single policy file in first stage (VFP).	ExtremeSwitching X450-G2, X460-G2, X465	2,048 ingress only
	ExtremeSwitching X695	1,024 ingress only
	ExtremeSwitching X440-G2	512 ingress only
<b>Access lists (slices)</b> —number of ACL slices.	ExtremeSwitching X460-G2, X450-G2	16 ingress 4 egress
	ExtremeSwitching X465, X695	12 ingress 4 egress
	ExtremeSwitching X440-G2	8 ingress 4 egress
<b>Access lists (slices)</b> —number of ACL slices in first stage (VFP).	ExtremeSwitching X450-G2, X460-G2, X465, X440-G2, X695	4 ingress only
<b>ACL Per Port Meters</b> —number of meters supported per port.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	16
<b>ACL port ranges.</b>	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	32
<b>Meters Packets-Per-Second Capable.</b>	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	Yes
<b>AVB (audio video bridging)</b> —maximum number of active streams.	ExtremeSwitching X450-G2, X460-G2, X440-G2	1,024
	ExtremeSwitching X465, X695	4,096
<b>BFD sessions (Software Mode)</b> —maximum number of BFD sessions.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695 (default timers—1 sec)	512
	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695 (minimal timers—100 msec)	10 <sup>C</sup>
<b>BFD IPv4 sessions (Hardware Assisted)</b> —maximum number of IPv4 BFD sessions.	ExtremeSwitching X460-G2, X465, X695	900 (PTP not enabled) 425 (PTP enabled) 256 (with 3 ms transmit interval)
<b>BFD IPv6 sessions (Hardware Assisted)</b> —maximum number of IPv6 BFD sessions.	ExtremeSwitching X460-G2, X465, X695	425 (PTP not enabled)
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per virtual router.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	8

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

Metric	Product	Limit
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per VLAN.	ExtremeSwitching X460-G2, 450-G2, X440-G2, X465, X695	8
<b>BOOTP/DHCP relay</b> —maximum number of DHCPv4/v6 relay agents	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	4,000
<b>Connectivity fault management (CFM)</b> —maximum number of CFM domains.  <b>Note:</b> With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	8
<b>CFM</b> —maximum number of CFM associations.  <b>Note:</b> With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	256
<b>CFM</b> —maximum number of CFM up end points.  <b>Note:</b> With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	32
<b>CFM</b> —maximum number of CFM down end points.  <b>Note:</b> With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695  ExtremeSwitching X460-G2	32  256 (non-load shared ports) 32 (load shared ports)
<b>CFM</b> —maximum number of CFM remote end points per up/down end point.  <b>Note:</b> With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	2,000
<b>CFM</b> —maximum number of dot1ag ports.  <b>Note:</b> With Advanced Edge license or higher.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	128

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

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



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

Metric	Product	Limit
<b>EAPS domains</b> —maximum number of EAPS domains.  <b>Note:</b> An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.  <b>Note:</b> You can increase the number of domains by upgrading to the Advanced Edge license.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4
<b>EAPSV1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X440-G2-24T/P	1,000
	ExtremeSwitching X465, X695	2,000
<b>ERPS domains</b> —maximum number of ERPS domains with or without CFM configured.  <b>Note:</b> You can increase the number of domains by upgrading to the Advanced Edge license.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4
<b>ERPSv1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X465, X695	2,000
	ExtremeSwitching X450-G2, X460-G2, X440-G2-24T/P	1,000
<b>ERPSv2 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X465, X695	2,000
	ExtremeSwitching X440-G2-24T/P	500
<b>ELSM (vlan-ports)</b> —maximum number of VLAN ports.	ExtremeSwitching X450-G2, X460-G2, X465, X695	5,000
	ExtremeSwitching X440-G2-24T/P	4,000
<b>Extended Edge Switching maximum BPEs</b> —maximum number of attached bridge port extenders (BPEs).	ExtremeSwitching X465	48
<b>Extended Edge Switching maximum cascade ports</b> —maximum number of upstream ports on bridge port extenders (BPEs).	ExtremeSwitching X465	2 on V400-24 and V300 models 4 on V400-48 models

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

Metric	Product	Limit
<b>Extended Edge Switching maximum tiers</b> —maximum number of cascade levels (tiers) of bridge port extenders (BPEs).	ExtremeSwitching X465	4 (except for V300-8P-2T-W, which support 1 tier)
<b>Extended Edge Switching maximum ring BPEs</b> —maximum number of bridge port extenders (BPEs) in a ring topology.	ExtremeSwitching X465	8
<b>Extended Edge Switching maximum VLANs</b> —maximum number of VLANs - Includes all VLANs	ExtremeSwitching X465	4,094
<b>Extended Edge Switching VLAN+ port memberships</b> —maximum number of VLAN+ (extended) port memberships.	ExtremeSwitching X465	12,000 in hash mode (default) 131,000 in port-group mode
<b>Forwarding rate</b> —maximum L3 software forwarding rate.	ExtremeSwitching X440-G2 ExtremeSwitching X450-G2 ExtremeSwitching X465 ExtremeSwitching X460-G2 ExtremeSwitching ExtremeSwitching X695	6,460 pps 16,000 pps 28,497 pps 17,000 pps 18,162 pps 34,813 pps
<b>FDB (unicast blackhole entries)</b> —maximum number of unicast blackhole FDB entries.	ExtremeSwitching X460-G2 ExtremeSwitching X450-G2 ExtremeSwitching X440-G2 ExtremeSwitching X465 ExtremeSwitching X695	49,152 <sup>f</sup> 34,816 <sup>f</sup> 16,384 <sup>f</sup> 278,528 <sup>f</sup> 294,912 <sup>f</sup>
<b>FDB (multicast blackhole entries)</b> —maximum number of multicast blackhole FDB entries.	ExtremeSwitching X460-G2, X450-G2, X440-G2 ExtremeSwitching X465, X695	1,024 4,096
<b>FDB (maximum L2 entries)</b> —maximum number of MAC addresses.	ExtremeSwitching X460-G2 ExtremeSwitching X450-G2 ExtremeSwitching X440-G2 ExtremeSwitching X465, X695 ExtremeSwitching X695	98,300 <sup>g</sup> 68,000 <sup>g</sup> 16,384 278,528 <sup>g</sup> 294,912 <sup>g</sup>

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

Metric	Product	Limit
<b>FDB (maximum L2 entries)</b> —maximum number of multicast FDB entries.	ExtremeSwitching X465, X695	4,096
	ExtremeSwitching X450-G2, X460-G2, X440-G2	1,024
<b>Identity management</b> —maximum number of Blacklist entries.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	512
<b>Identity management</b> —maximum number of Whitelist entries.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	512
<b>Identity management</b> —maximum number of roles that can be created.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	64
<b>Identity management</b> —maximum role hierarchy depth allowed.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	5
<b>Identity management</b> —maximum number of attribute value pairs in a role match criteria.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	16
<b>Identity management</b> —maximum number of child roles for a role.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>Identity management</b> —maximum number of policies/dynamic ACLs that can be configured per role.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>Identity management</b> —maximum number of LDAP servers that can be configured.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>Identity management</b> —maximum number of Kerberos servers that can be configured.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	20
<b>Identity management</b> —maximum database memory size.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	512

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

Metric	Product	Limit
<b>Identity management</b> —recommended number of identities per switch.  <b>Note:</b> Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	100
<b>Identity management</b> —recommended number of ACL entries per identity.  <b>Note:</b> Number of ACLs per identity, based on system ACL limitation.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	20
<b>Identity management</b> —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	500
<b>IGMP snooping per VLAN filters</b> —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	ExtremeSwitching X460-G2, X695	1,500
	ExtremeSwitching X450-G2	2,048
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X465	4,000
<b>IGMPv1/v2 SSM-map entries</b> —maximum number of IGMPv1/v2 SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	500
<b>IGMPv1/v2 SSM-map entries</b> —maximum number of sources per group in IGMPv1/v2 SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	50
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per port. <sup>n</sup>	ExtremeSwitching X465, X695, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2	3,500
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per switch. <sup>n</sup>	ExtremeSwitching X460-G2, X450-G2	20,000
	ExtremeSwitching X440-G2	17,500
	ExtremeSwitching X465, X695	45,000

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

Metric	Product	Limit
<b>IGMPv3 maximum source per group</b> —maximum number of source addresses per group.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	250
<b>IGMPv3 subscriber</b> —maximum number of IGMPv3 subscribers per port. <sup>n</sup>	ExtremeSwitching X440-G2	3,500
	ExtremeSwitching X460-G2, X450-G2, X465, X695	4,000
<b>IGMPv3 subscriber</b> —maximum number of IGMPv3 subscribers per switch. <sup>n</sup>	ExtremeSwitching X460-G2, X450-G2	20,000
	ExtremeSwitching X440-G2	17,500
	ExtremeSwitching X465, X695	45,000
<b>IP ARP entries in software</b> —maximum number of IP ARP entries in software.  <b>Note:</b> Might be limited by hardware capacity of FDB (maximum L2 entries).	ExtremeSwitching X460-G2	57,344 (up to) <sup>h</sup>
	ExtremeSwitching X450-G2	47,000 (up to) <sup>h</sup>
	ExtremeSwitching X440-G2	20,480
	ExtremeSwitching X465	157,694 (up to) <sup>h</sup>
	ExtremeSwitching X695	184,318 (up to) <sup>h</sup>
<b>IPv4 ARP entries in hardware with minimum LPM routes</b> —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) <sup>h</sup>
	ExtremeSwitching X450-G2	39,000 (up to) <sup>h</sup>
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X465	119,000 (up to) <sup>h</sup>
	ExtremeSwitching X695	146,000 (up to) <sup>h</sup>
<b>IPv4 ARP entries in hardware with maximum LPM routes</b> —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) <sup>h</sup>
	ExtremeSwitching X450-G2	29,000 (up to) <sup>h</sup>
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X465	109,000 (up to) <sup>h</sup>
	ExtremeSwitching X695	125,000 (up to) <sup>h</sup>
<b>IP flow information export (IPFIX)</b> —number of simultaneous flows.	ExtremeSwitching X460-G2	2,048 ingress 2,048 egress
	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	N/A

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

Metric	Product	Limit
<b>IPv4 remote hosts in hardware with zero LPM routes</b> —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 <sup>h</sup>
	ExtremeSwitching X450-G2	61,000 (up to) <sup>h</sup>
	ExtremeSwitching X440-G2	3,500
	ExtremeSwitching X465	216,000 (up to) <sup>h</sup>
	ExtremeSwitching X695	241,000 (up to) <sup>h</sup>
<b>IPv4 routes</b> —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	25,000
	ExtremeSwitching X465, X695	131,000
<b>IPv4 routes (LPM entries in hardware)</b> — number of IPv4 routes in hardware.	ExtremeSwitching X460-G2	12,000
	ExtremeSwitching X450-G2	16,000
	ExtremeSwitching X465, X695	131,000 <sup>q</sup>
	ExtremeSwitching X440-G2	480
<b>IPv6 6in4 tunnel</b> —maximum number of IPv6 6in4 tunnels.	ExtremeSwitching X450-G2, X460-G2, X465, X695	255
	ExtremeSwitching X440-G2	N/A
<b>IPv6 6to4 tunnel</b> —maximum number of IPv6 6to4 tunnels.	ExtremeSwitching X450-G2, X460-G2, X465, X695	1 (per virtual router)
	ExtremeSwitching X440-G2	N/A
<b>IPv6 addresses on an interface</b> —maximum number of IPv6 addresses on an interface.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	255
<b>IPv6 addresses on a switch</b> —maximum number of IPv6 addresses on a switch.	ExtremeSwitching X460-G2, X450-G2, X465, X695	2,048
	ExtremeSwitching X440-G2	510
<b>IPv6 host entries in hardware</b> —maximum number of IPv6 neighbor entries in hardware.	ExtremeSwitching X460-G2,	22,000 <sup>h</sup>
	ExtremeSwitching X450-G2	12,000 <sup>h</sup>
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X465	24,500 <sup>s</sup>
	ExtremeSwitching X695	57,000 <sup>h</sup>

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

Metric	Product	Limit
<b>IPv6 routes in software</b> —maximum number of IPv6 routes in software, including static routes and routes from all routing protocols.	ExtremeSwitching X450-G2, X460-G2, X440-G2	25,000
	ExtremeSwitching X465, X695	65,000 <sup>q</sup>
<b>IPv6 routes (LPM entries in hardware)</b> —maximum number of IPv6 routes in hardware.	ExtremeSwitching X460-G2	6,000
	ExtremeSwitching X450-G2	8,000
	ExtremeSwitching X465, X695	65,000 <sup>q</sup>
	ExtremeSwitching X440-G2	240
<b>IPv6 routes with a mask greater than 64 bits in hardware</b> —maximum number of such IPv6 LPM routes in hardware.	ExtremeSwitching X465, X695	8,192 <sup>r</sup>
	ExtremeSwitching X440-G2	1,024
	ExtremeSwitching X450-G2, X460-G2	2,048
<b>IPv6 route sharing in hardware</b> —route mask lengths for which ECMP is supported in hardware.	ExtremeSwitching X460-G2, X450-G2	0–64 >64 single path only
	ExtremeSwitching X465, X695	0–128 <sup>r</sup>
	ExtremeSwitching X440-G2	Not supported
<b>IP router interfaces</b> —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X460-G2, X450-G2, X465, X695	2,048
	ExtremeSwitching X440-G2	510
<b>IP multicast static routes</b> —maximum number of permanent multicast IP routes.	ExtremeSwitching X460-G2, X450-G2, X465, X695	1,024
<b>IP unicast static routes</b> —maximum number of permanent IP unicast routes.	ExtremeSwitching X460-G2, X450-G2, X465, X695	1,024
	ExtremeSwitching X440-G2	480

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

Metric	Product	Limit
<b>IP route sharing (maximum gateways)</b> —Configurable maximum number of gateways used by equal cost multipath OSPF, BGP, IS-IS, static routes, or L2VPNs. Static routes, OSPF, and BGP are limited to 64 ECMP gateways per destination, while IS-IS is limited to 8. L2VPNs are limited to 16 LSPs per pseudowire on platforms that support 32 gateways, and 64 LSPs per pseudowire on platforms that support 64 gateways.	ExtremeSwitching X460-G2, X450-G2, X465, X695	2, 4, 8, 16, 32, or 64
	ExtremeSwitching X440-G2	N/A



**Table 8: 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 X465, X695	
	if maximum gateways is 2	4,094
	if maximum gateways is 4	4,094
	if maximum gateways is 8	2,046
	if maximum gateways is 16 (default)	1,022
	if maximum gateways is 32	510
	if maximum gateways is 64	254
	<b>Note:</b> The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see <a href="#">ExtremeXOS v33.2.1 User Guide</a> .	
	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
IP multinetting (secondary IP addresses)—maximum number of secondary IP addresses per VLAN.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	255
Jumbo frames—maximum size supported for jumbo frames, including the CRC.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	9,216

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

Metric	Product	Limit
<b>Layer-2 IPMC forwarding caches</b> —(IGMP/MLD/PIM snooping) in mac-vlan mode.  <b>Note:</b> <ul style="list-style-type: none"> <li>The internal lookup table configuration used is "I2-and-I3".</li> <li>IPv6 and IPv4 L2 IPMC scaling is the same for this mode.</li> <li>Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same.</li> </ul>	ExtremeSwitching X695	73,000
	ExtremeSwitching X460-G2	24,000
	ExtremeSwitching X450-G2	14,000
	ExtremeSwitching X440-G2	5,000
	ExtremeSwitching X465	67,000
<b>Layer-3 IPv4 Multicast</b> —maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).  <b>Note:</b> <ul style="list-style-type: none"> <li>Limit value is the same for MVR senders, PIM Snooping entries, PIM SSM cache, IGMP senders, PIM cache.</li> <li>Assumes source-group-vlan mode as look up key.</li> <li>Layer 3 IPMC cache limit in mixed mode also has the same value.</li> </ul>	ExtremeSwitching X460-G2	26,000
	ExtremeSwitching X450-G2	21,000
	ExtremeSwitching X440-G2	1,500
	ExtremeSwitching X465	93,000
	ExtremeSwitching X695	104,000
<b>Layer-3 IPv6 Multicast</b> —maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).  <b>Note:</b> <ul style="list-style-type: none"> <li>Limit value is the same for MLD sender per switch, PIM IPv6 cache.</li> <li>Assumes source-group-vlan mode as lookup key.</li> </ul>	ExtremeSwitching X460-G2	14,000
	ExtremeSwitching X450-G2	10,000
	ExtremeSwitching X440-G2	700
	ExtremeSwitching X465	48,000
	ExtremeSwitching X695	52,000

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

Metric	Product	Limit
<b>Load sharing</b> —maximum number of load sharing groups.  <b>Note:</b> The actual number of load-sharing groups that can be configured is limited by the number of physical ports present in the switch or SummitStack.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	128
<b>Load sharing</b> —maximum number of ports per load-sharing group.	For standalone and stacked: ExtremeSwitching X440-G2	8
	For standalone: ExtremeSwitching X460-G2, X450-G2, X465, X695	32
	For stacked: ExtremeSwitching X460-G2, X450-G2, X465, X695	64
<b>Logged messages</b> —maximum number of messages logged locally on the system.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	20,000
<b>MAC-based security</b> —maximum number of MAC-based security policies.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1,024
<b>MAC Locking</b> —Maximum number of MAC locking stations that can be learned on a port.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	64 (static MAC locking stations) 600 (first arrival MAC locking stations)
<b>Meters</b> —maximum number of meters supported.	ExtremeSwitching X460-G2, X450-G2, X440-G2 , X465, X695	2,048

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

Metric	Product	Limit
<b>Maximum mirroring instances.</b>	ExtremeSwitching X450-G2, X460-G2, X465, X695  <b>Note:</b> 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:  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 X440-G2  <b>Note:</b> For stacks containing X440-G2, maximum supported egress mirror instances is 1.	1 (egress)
<b>Mirroring (filters)</b> —maximum number of mirroring filters.  <b>Note:</b> This is the number of filters across all the active mirroring instances.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	128
<b>Mirroring, one-to-many (filters)</b> —maximum number of one-to-many mirroring filters.  <b>Note:</b> This is the number of filters across all the active mirroring instances.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	128
<b>Mirroring, one-to-many (monitor port)</b> —maximum number of one-to-many monitor ports.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	16

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

Metric	Product	Limit
<b>MLAG ports</b> —maximum number of MLAG ports allowed.  <b>Note:</b> The number of MLAG ports that can be configured is limited by the number of physical ports present in the system.	ExtremeSwitching X695	61
	ExtremeSwitching X440-G2, X450-G2	51
	ExtremeSwitching X460-G2	53
	ExtremeSwitching	35
	ExtremeSwitching X465	55
	Stacking	480
<b>MLAG peers</b> —maximum number of MLAG peers allowed.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	2
<b>Multicast listener discovery (MLD) snooping per-VLAN filters</b> —maximum number of VLANs supported in per-VLAN MLD snooping mode.	ExtremeSwitching X460-G2	768
	ExtremeSwitching X450-G2	508
	ExtremeSwitching X440-G2	256
	ExtremeSwitching X465, X695	1,500
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per port. <sup>n</sup>	ExtremeSwitching X450-G2, X460-G2	4,000
	ExtremeSwitching X440-G2	3,500
	ExtremeSwitching X465, X695	4,000
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per switch. <sup>n</sup>	ExtremeSwitching X460-G2, X450-G2, X440-G2	10,000
	ExtremeSwitching X465, X695	45,000
<b>Multicast listener discovery (MLD)v2 subscribers</b> —maximum number of MLDv2 subscribers per port. <sup>n</sup>	ExtremeSwitching X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2	3,500
	ExtremeSwitching X465, X695	4,000
<b>Multicast listener discovery (MLD)v2 subscribers</b> —maximum number of MLDv2 subscribers per switch. <sup>n</sup>	ExtremeSwitching X460-G2, X450-G2, X440-G2	10,000
	ExtremeSwitching X465, X695	45,000
<b>Multicast listener discovery (MLD)v2 maximum source per group</b> —maximum number of source addresses per group.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	200

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

Metric	Product	Limit
<b>Multicast listener discovery (MLD) SSM-map entries</b> —maximum number of MLD SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X465, X695	500
	ExtremeSwitching X440-G2	50
<b>Multicast listener discovery (MLD) SSM-MAP entries</b> —maximum number of sources per group in MLD SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	50
<b>Network Login</b> —maximum number of clients being authenticated on MAC-based VLAN enabled ports.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1,024
<b>Network Login</b> —maximum number of clients being authenticated with policy mode enabled with TCI overwrite enabled.	ExtremeSwitching X450-G2, X460-G2, X465	1,024
	ExtremeSwitching X695	512
	ExtremeSwitching X440-G2	256
<b>Network Login</b> —maximum number of dynamic VLANs.	ExtremeSwitching X460-G2, X450-G2, X465, X695	2,000
	ExtremeSwitching X440-G2	1,024
<b>Network Login VLAN VSAs</b> —maximum number of VLANs a client can be authenticated on at any given time.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	10
<b>Network Service Identifiers (NSI)/VLAN mappings</b> —maximum number of VLANs to NSI mappings.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	94
<b>Network Address Translation (NAT) VLANs</b> —maximum number of NAT VLANs.	ExtremeSwitching X465, X695	4
<b>Network Address Translation (NAT) Sessions</b> —number of NAT sessions supported (non twice-NAT).	ExtremeSwitching X465, X695	1,023
<b>Node Alias</b> —maximum number of entries per slot.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8,192

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

Metric	Product	Limit
<b>ONEPolicy Dynamic ACL Rules</b> —maximum number of Dynamic ACLs supported via RADIUS VSA 232 per user in Access-List mode.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	64
<b>ONEPolicy Roles/Profiles</b> —maximum number of policy roles/profiles.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	63
<b>ONEPolicy Rules per Role/Profile</b> —maximum number of rules per role/policy.	<p>ExtremeSwitching X450-G2, X460-G2</p> <p>ExtremeSwitching X440-G2</p> <p>ExtremeSwitching X465, X695</p>	<p>IPv6 rules: 256 IPv4 rules: 256 L2 Rules: 184 MAC Rules: 256</p> <p>IPv6 and Mac Rules: 0 Ipv4 Rules: 256 (per switch) L2 Rules: 184 (per switch)</p> <p>IPv4 Rules: 512 IPv6 Rules: 512 MAC Rules: 512 L2 Rules: 440</p>
<b>ONEPolicy Authenticated Users per Switch</b> —maximum number of authenticated users per switch only with TCI-Overwrite enabled.	<p>ExtremeSwitching X450-G2, X460-G2, X465</p> <p>ExtremeSwitching X695</p> <p>ExtremeSwitching X440-G2</p> <p>Stacking</p>	<p>1,024</p> <p>512</p> <p>256</p> <p>Depends on the stack nodes, but the maximum is 65,535.</p>
<b>ONEPolicy Authenticated Users per Switch</b> —maximum number of authenticated users per switch with TCI-Overwrite disabled.  <b>Note:</b> The maximum values assume 75% utilization of VLAN-XLATE hash table.	<p>ExtremeSwitching X465</p> <p>ExtremeSwitching X460-G2,, X695</p> <p>ExtremeSwitching X450-G2</p> <p>ExtremeSwitching X440-G2</p> <p>Stacking</p>	<p>24,576</p> <p>12,288</p> <p>6,144</p> <p>1,536</p> <p>1,536–65,534</p>

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

Metric	Product	Limit
<b>ONEPolicy Authenticated Users per Port per Switch</b> — maximum number of authenticated users per port per switch with TCI overwrite disabled.  <b>Note:</b> The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching X450-G2	6,144
	ExtremeSwitching X460-G2, X695	12,288
	ExtremeSwitching X465	24,576
	ExtremeSwitching X440-G2	1,536
<b>ONEPolicy Authenticated Users per Port per Switch</b> — maximum number of authenticated users per port with only with TCI-Overwrite enabled.	ExtremeSwitching X450-G2, X460-G2, X465	1,024
	ExtremeSwitching X695	512
	ExtremeSwitching X440-G2	256
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —total maximum number of unique permit/deny traffic classification rules types (system/stack).	ExtremeSwitching X450-G2, X460-G2	952
	ExtremeSwitching X440-G2	440
	ExtremeSwitching X465, X695	1,976
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest).	ExtremeSwitching X450-G2, X460-G2	256
	ExtremeSwitching X440-G2	N/A
	ExtremeSwitching X465, X695	512
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest).	ExtremeSwitching X450-G2, X460-G2	256
	ExtremeSwitching X440-G2	N/A
	ExtremeSwitching X465, X695	512
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype).	ExtremeSwitching X450-G2, X460-G2, X440-G2,	256
	ExtremeSwitching X465, X695	512



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

Metric	Product	Limit
<b>ONEPolicy Permit/Deny Traffic Classification Rules Types</b> —maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port).	ExtremeSwitching X450-G2, X460-G2	184
	ExtremeSwitching X440-G2	184
	ExtremeSwitching X465, X695	440
<b>OnePolicy Maximum number of rules supported in AccessList mode</b> —maximum number of rules in AccessList mode.	ExtremeSwitching X450-G2, X460-G2	3,000
	ExtremeSwitching X440-G2	952
	ExtremeSwitching X695	3,512
	ExtremeSwitching X435	440
<b>Policy-based routing (PBR) redundancy</b> —maximum number of flow-redirects.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	256 <sup>o</sup>
<b>Policy-based routing (PBR) redundancy</b> —maximum number of next hops per each flow-direct.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	32 <sup>o</sup>
<b>Private VLANs</b> —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 X695	71
	ExtremeSwitching X465	31
<b>Private VLANs</b> —maximum number of private VLANs with an IP address on the network VLAN.  <b>Note:</b> This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports.	ExtremeSwitching X460-G2, X465, X695	1,024
	ExtremeSwitching X450-G2	510
	ExtremeSwitching X440-G2	255
<b>Private VLANs</b> —maximum number of private VLANs in an L2-only environment.	ExtremeSwitching X460-G2, X465, X695	1,280
	ExtremeSwitching X450-G2	597
	ExtremeSwitching X440-G2	255
<b>Route policies</b> —suggested maximum number of lines in a route policy file.	ExtremeSwitching X460-G2, X440-G2, X465, X695	10,000

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

Metric	Product	Limit
<b>RIP Learned Routes</b> —maximum number of RIP routes supported without aggregation.	ExtremeSwitching X460-G2, X440-G2, X465, X695	10,000
<b>RIP interfaces on a single router</b> —recommended maximum number of RIP routed interfaces on a switch.	ExtremeSwitching X460-G2, X450-G2, X465, X695	256
	ExtremeSwitching X440-G2	128
<b>RIPng learned routes</b> —maximum number of RIPng routes.	ExtremeSwitching X460-G2, X450-G2, X465, X695	3,000
	ExtremeSwitching X440-G2	N/A
<b>Spanning Tree (maximum STPDs)</b> —maximum number of Spanning Tree Domains on port mode EMISTP.	ExtremeSwitching X450-G2, X460-G2, X465, X695	64
	ExtremeSwitching X440-G2	32
<b>Spanning Tree PVST+</b> —maximum number of port mode PVST domains.  <b>Note:</b> For all platforms, the maximum number of active ports per PVST domain depends on the maximum number of spanning tree ports supported on given platform. For example, on a switch that supports 256 PVST domains (maximum) and 4,096 STP ports (maximum), the maximum number of active ports per PVST domain would be 16 ports ( $4,096 \div 256$ ).	ExtremeSwitching X460-G2, X450-G2, X440-G2	128
	ExtremeSwitching X465, X695	384
<b>Spanning Tree</b> —maximum number of multiple spanning tree instances (MSTI) domains.	ExtremeSwitching X450-G2, X460-G2, X465, X695	64
	ExtremeSwitching X440-G2,	32
<b>Spanning Tree</b> —maximum number of VLANs per MSTI.  <b>Note:</b> Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI.	ExtremeSwitching X460-G2, X450-G2, X465, X695	600
	ExtremeSwitching X440-G2	256

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

Metric	Product	Limit
<b>Spanning Tree</b> —maximum number of VLANs on all MSTP instances.	ExtremeSwitching X460-G2, X450-G2, X465, X695	1,024
	ExtremeSwitching X440-G2	512
<b>Spanning Tree (802.1d domains)</b> —maximum number of 802.1d domains per port.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1
<b>Spanning Tree (number of ports)</b> —maximum number of ports including all Spanning Tree domains.	ExtremeSwitching X450-G2, X460-G2, X465, X695	4,096
	ExtremeSwitching X440-G2	2,048
<b>Spanning Tree (maximum VLANs)</b> —maximum number of STP-protected VLANs (dot1d and dot1w).	ExtremeSwitching X460-G2, X450-G2, X465, X695	1,024
	ExtremeSwitching X440-G2	600
<b>SSH (number of sessions)</b> —maximum number of simultaneous SSH sessions.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>Static MAC multicast FDB entries</b> —maximum number of permanent multicast MAC entries configured into the FDB.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1,024
<b>Syslog servers</b> —maximum number of simultaneous Syslog servers that are supported.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	16
<b>Syslog targets</b> —maximum number of configurable Syslog targets.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	16
<b>Telnet (number of sessions)</b> —maximum number of simultaneous Telnet sessions.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>Virtual routers</b> —maximum number of user-created virtual routers that can be created on a switch.	ExtremeSwitching X460-G2, X450-G2, X465, X695	63
	ExtremeSwitching X440-G2	16 (local-only VRs)

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

Metric	Product	Limit
<b>Virtual router forwarding (VRFs)</b> —maximum number of VRFs that can be created on a switch.  <b>Note:</b> * Subject to other system limitations.	ExtremeSwitching X460-G2,X450-G2, X465, X695	960 *
	ExtremeSwitching X440-G2	16 (local-only VRFs)
<b>Virtual router protocols per VR</b> —maximum number of routing protocols per VR.	ExtremeSwitching X460-G2,X450-G2, X465, X695	8
	ExtremeSwitching X440-G2	N/A
<b>Virtual router protocols per switch</b> —maximum number of VR protocols per switch.	ExtremeSwitching X460-G2,X450-G2, X465, X695	64
	ExtremeSwitching X440-G2	N/A
<b>VLAN aggregation</b> —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1,000
<b>VLANs</b> —includes all VLANs.  <b>Note:</b> Only 4,092 user-configurable VLANs are supported. (VLAN 1 is the default VLAN, and 4,095 is the management VLAN, and you may not configure them.)	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4,094
<b>VLANs (Layer 2)</b> —maximum number of Layer 2 VLANs.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4,094
<b>VLANs (Layer 3)</b> —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X460-G2,X450-G2, X465, X695	2,048
	ExtremeSwitching X440-G2	510
<b>VLAN Port Interfaces (VPIF)</b> —maximum number of VLAN port interfaces.	ExtremeSwitching X440-G2, X450-G2, X460-G2	65,536
	ExtremeSwitching X465, X695	131,585

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

Metric	Product	Limit
<b>VLANs (maximum active port-based)</b> —maximum active ports per VLAN when 4,094 VLANs are configured with the default license.	ExtremeSwitching X465, X695	32
	ExtremeSwitching X440-G2	28
	ExtremeSwitching X460-G2	26
	ExtremeSwitching X450-G2	29
<b>VLANs (maximum active protocol-sensitive filters)</b> —number of simultaneously active protocol filters in the switch.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	16
<b>VLAN translation</b> —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 X440-G2	47
	ExtremeSwitching X695	71
	ExtremeSwitching X465	31
<b>VLAN translation</b> —maximum number of translation VLAN pairs with an IP address on the translation VLAN.  <b>Note:</b> This limit is dependent on the maximum number of translation VLAN pairs in an L2-only environment if the configuration includes tagged and translated ports.	ExtremeSwitching X465, X695	1,024
	ExtremeSwitching X450-G2	512
	ExtremeSwitching X440-G2	255
<b>VLAN translation</b> —maximum number of translation VLAN pairs in an L2-only environment.	ExtremeSwitching X450-G2, X460-G2, X465, X695	2,046
	ExtremeSwitching X440-G2	255
<b>VMAN CEP</b> —maximum number of CVIDs.  <b>Note:</b> With 75% hash table utilization.	ExtremeSwitching X440-G2	1,500
	ExtremeSwitching X450-G2	6,000
	ExtremeSwitching X460-G2,	12,000
	ExtremeSwitching X465	24,000

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

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

## Advanced Edge License Limits

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



### Note

X590, X620-X (fiber), and X690 are not supported in this version.

**Table 9: Supported Limits for Advanced Edge License**

Metric	Product	Limit
<b>BGP auto-peering</b> —maximum number of auto-peering nodes and VTEPs.	ExtremeSwitching, X465, X695	64
<b>BGP auto-peering attached IPv4 hosts</b> —maximum number of attached IPv4 hosts.	ExtremeSwitching, X465, X695	64,000
<b>BGP auto-peering attached IPv6 hosts</b> —maximum number of attached IPv6 hosts.	ExtremeSwitching, X465, X695	8,000
<b>BGP auto-peering ECMP</b> —maximum number of equal cost multipath for auto-peering.  <b>Note:</b> * Subject to the limitation imposed by the number of physical ports on a switch.	ExtremeSwitching, X465, X695	16*
<b>BGP auto-peering maximum IPv4 prefixes with ECMP</b> —Maximum number of IPv4 Network prefixes with ECMP.	ExtremeSwitching, X465, X695	64,000
<b>BGP auto-peering maximum IPv6 prefixes with ECMP</b> —Maximum number of IPv6 Network prefixes with ECMP.	ExtremeSwitching, X465, X695	8,000
<b>BGP auto-peering MLAG peers</b> —maximum MLAG peers per AutoBGP node.	ExtremeSwitching, X465, X695	1
<b>BGP auto-peering VRFs</b> —maximum number of VRFs.	ExtremeSwitching, X465, X695	64
<b>BGP auto-peering EVPN instances</b> —maximum EVPN instances.	ExtremeSwitching, X465, X695	1,024

**Table 9: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>EAPS domains</b> —maximum number of EAPS domains.  <b>Note:</b> An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.	ExtremeSwitching, X465, X695	128
	ExtremeSwitching X450-G2, X460-G2	64
	ExtremeSwitching X440-G2	32
<b>EAPSV2 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X440-G2	500
	ExtremeSwitching, X465, X695	2,000
<b>ERPS domains</b> —maximum number of ERPS domains without CFM configured.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	32
<b>ERPS domains</b> —maximum number of ERPS domains with CFM configured.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	32
<b>ERPSv1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X465, X695	2,000
	ExtremeSwitching X440-G2	1,000
<b>ERPSv2 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X465, X695	2,000
	ExtremeSwitching X440-G2	500
<b>ESRP groups</b> —maximum number of ESRP groups	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	32
<b>ESRP domains</b> —maximum number of ESRP domains.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	64
<b>ESRP L2 VLANs</b> —maximum number of ESRP VLANs without an IP address configured.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1,000
<b>ESRP L3 VLANs</b> —maximum number of ESRP VLANs with an IP address configured.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	511
<b>ESRP (maximum ping tracks)</b> —maximum number of ping tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>ESRP (IP route tracks)</b> —maximum IP route tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>ESRP (VLAN tracks)</b> —maximum number of VLAN tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	1



**Table 9: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch</b> —maximum number of VCCV enabled VPLS VPNs.	ExtremeSwitching X460-G2, X465, X695	16
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>L2 VPN: VPLS MAC addresses</b> —maximum number of MAC addresses learned by a switch.	ExtremeSwitching, X465, X695	140,000
	ExtremeSwitching X460-G2	55,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>L2 VPN: VPLS VPNs</b> — maximum number of VPLS virtual private networks per switch.	ExtremeSwitching X460-G2, X465, X695	1,023
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>L2 VPN: VPLS peers</b> — maximum number of VPLS peers per VPLS instance.	ExtremeSwitching X460-G2, X465, X695	64
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>L2 VPN: LDP pseudowires</b> —maximum number of pseudowires per switch.	ExtremeSwitching X460-G2, X465, X695	7,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>L2 VPN: static pseudowires</b> — maximum number of static pseudowires per switch.	ExtremeSwitching X460-G2, X465, X695	7,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>L2 VPN: Virtual Private Wire Service (VPWS) VPNs</b> — maximum number of virtual private networks per switch.	ExtremeSwitching, X465, X695	4,090
	ExtremeSwitching X460-G2	1,023
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS RSVP-TE interfaces</b> —maximum number of interfaces.	ExtremeSwitching X460-G2, X465, X695,	32
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS RSVP-TE ingress LSPs</b> — maximum number of ingress LSPs.	ExtremeSwitching X460-G2,, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS RSVP-TE egress LSPs</b> — maximum number of egress LSPs.	ExtremeSwitching X460-G2, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS RSVP-TE transit LSPs</b> — maximum number of transit LSPs.	ExtremeSwitching X460-G2,	2,000
	ExtremeSwitching, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS RSVP-TE paths</b> — maximum number of paths.	ExtremeSwitching X460-G2	1,000
	ExtremeSwitching, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2	N/A

**Table 9: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>MPLS RSVP-TE profiles</b> —maximum number of profiles.	ExtremeSwitching X460-G2	1,000
	ExtremeSwitching, X465, X695	2,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS RSVP-TE EROs</b> —maximum number of EROs per path.	ExtremeSwitching X460-G2, X465, X695	64
	ExtremeSwitching X450-G2, and ExtremeSwitching X440-G2	N/A
<b>MPLS LDP peers</b> —maximum number of MPLS LDP peers per switch.	ExtremeSwitching X460-G2, X465, X695	128
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS LDP adjacencies</b> —maximum number of MPLS LDP adjacencies per switch.	ExtremeSwitching X460-G2	50
	ExtremeSwitching, X465, X695	64
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS LDP ingress LSPs</b> —maximum number of MPLS LSPs that can originate from a switch.	ExtremeSwitching X460-G2, X465, X695	2,048
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS LDP-enabled interfaces</b> —maximum number of MPLS LDP configured interfaces per switch.	ExtremeSwitching X460-G2, X465, X695	128
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS LDP transit LSPs</b> —maximum number of MPLS transit LSPs per switch.	ExtremeSwitching X460-G2, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS LDP egress LSPs</b> —maximum number of MPLS egress LSPs that can terminate on a switch.	ExtremeSwitching X460-G2, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS static egress LSPs</b> —maximum number of static egress LSPs.	ExtremeSwitching X460-G2	7,116
	ExtremeSwitching, X465, X695	8,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS static ingress LSPs</b> —maximum number of static ingress LSPs.	ExtremeSwitching X460-G2, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>MPLS static transit LSPs</b> —maximum number of static transit LSPs	ExtremeSwitching X460-G2, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2	N/A
<b>OSPFv2/v3 ECMP</b> —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching X460-G2, X450-G2, X465, X695	64
	ExtremeSwitching X440-G2	N/A

**Table 9: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>OSPFv2 areas</b> —as an ABR, how many OSPF areas are supported within the same switch.	ExtremeSwitching X460-G2, X465, X695	8
	ExtremeSwitching X450-G2, X440-G2	4
<b>OSPFv2 external routes</b> —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching, X465, X695	10,000
	ExtremeSwitching X460-G2	5,000
	ExtremeSwitching X450-G2, X440-G2	2,400
<b>OSPFv2 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching, X465, X695	2,000
	ExtremeSwitching X460-G2	2,000
	ExtremeSwitching X450-G2, X440-G2	1,000
<b>OSPFv2 inter-vr or leaking routes</b> —recommended maximum number of inter-vr routes contained in an OSPF LSDB.	ExtremeSwitching, X465, X695, X460-G2	2,000
	ExtremeSwitching X450-G2, X440-G2	1,000
<b>OSPFv2 interfaces</b> —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4
<b>OSPFv2 links</b> —maximum number of links in the router LSA.	ExtremeSwitching X460-G2, X465, X695	400
	ExtremeSwitching X450-G2, X440-G2	4
<b>OSPFv2 neighbors</b> —maximum number of supported OSPF adjacencies.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4
<b>OSPFv2 routers in a single area</b> —recommended maximum number of routers in a single OSPF area.	ExtremeSwitching, X465, X695	100
	ExtremeSwitching X460-G2	50
	ExtremeSwitching X450-G2, X440-G2	4
<b>OSPFv2 virtual links</b> —maximum number of supported OSPF virtual links.	ExtremeSwitching X460-G2, X465, X695	32
	ExtremeSwitching X450-G2, X440-G2	4
<b>OSPFv3 areas</b> —as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching, X465, X695	100
	ExtremeSwitching X460-G2	16
	ExtremeSwitching X450-G2, X440-G2	4
<b>OSPFv3 external routes</b> —recommended maximum number of external routes.	ExtremeSwitching X460-G2, X465, X695	10,000
	ExtremeSwitching X450-G2, X440-G2	1,200

**Table 9: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>OSPFv3 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes.	ExtremeSwitching, X465, X695	4,000
	ExtremeSwitching X460-G2	3,000
	ExtremeSwitching X450-G2, X440-G2	500
<b>OSPFv3 interfaces</b> —maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	4
<b>OSPFv3 neighbors</b> —maximum number of OSPFv3 neighbors.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	4
<b>OSPFv3 virtual links</b> —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching X460-G2, X465, X695	16
	ExtremeSwitching X450-G2, X440-G2	4
<b>PIM IPv4 (maximum interfaces)</b> —maximum number of PIM active interfaces.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	4
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	180
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	3,000 (depends on policy file limits)
<b>PIM IPv4 Limits</b> —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X450-G2, X465, X695	5,000
	ExtremeSwitching X440-G2	1,500
<b>PIM IPv4 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	145
<b>PIM IPv4 Limits</b> —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	32
<b>PIM IPv6 (maximum interfaces)</b> —maximum number of PIM active interfaces.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X465, X695	4
<b>PIM IPv6 Limits</b> —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X465, X695	1,750
	ExtremeSwitching X450-G2	1,500
	ExtremeSwitching X440-G2	550

**Table 9: Supported Limits for Advanced Edge License (continued)**

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

**Table 9: Supported Limits for Advanced Edge License (continued)**

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

**Table 9: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks)</b> —maximum number of IP route tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>VRRP (v2/v3-IPv4/IPv6)</b> —maximum number of VLAN tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X440-G2, X465, X695	8
<b>VXLAN</b> —maximum virtual networks.  <b>Note:</b> Every VPLS instance/PSTag VLAN reduces this limit by 1.  <b>Note:</b> Assumption is all BUM (broadcast/unknown-unicast/multicast) FDB entries are pointing to the same set of RTEPs when all VNETs use explicit flooding. Depends on whether all VNETs use standard or explicit and the number of tenant VLAN ports.	ExtremeSwitching X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2	2,048–4,000  N/A
<b>VXLAN</b> —maximum tenant VLANs plus port combinations  <b>Note:</b> Every (VPLS/PSTag VLAN) + port reduces the limit by 1.	ExtremeSwitching X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2	4,096  N/A
<b>VXLAN</b> —maximum static MAC to IP bindings.  <b>Note:</b> Every FDB entry configured reduces this limit by 1.	ExtremeSwitching X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2	64,000  N/A
<b>VXLAN</b> —maximum RTEP IP addresses	ExtremeSwitching X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2	512  N/A
<b>VXLAN</b> —maximum virtual networks with dynamic learning and OSPF extensions for VXLAN	ExtremeSwitching X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2	4,000  N/A
<b>VXLAN</b> —or replicator role, maximum number of attached leafs per switch.	ExtremeSwitching X465, X695	256



## Core License Limits

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



### Note

X590, X620-X (fiber), and X690 are not supported in this version.

**Table 10: Supported Limits for Core License**

Metric	Product	Limit
<b>Anycast RP Using PIM</b> —maximum number of IPv4 Anycast RP set per VR.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X465, X695	32
<b>Anycast RP Using PIM</b> —maximum number of IPv6 Anycast RP set per VR.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X465, X695	32
<b>Anycast RP Using PIM</b> —RP peers per Anycast RP set.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X465, X695	10
<b>BGP (aggregates)</b> —maximum number of BGP aggregates.	ExtremeSwitching X460-G2, X465, X695	256
	ExtremeSwitching X450-G2	204
<b>BGP (networks)</b> —maximum number of BGP networks.	ExtremeSwitching X460-G2, X465, X695	1,024
	ExtremeSwitching X450-G2	820
<b>BGP (peers)</b> —maximum number of BGP peers.  <b>Note:</b> With default keepalive and hold timers.  <b>Note:</b> Each BGPv4/BGPv6 peer handles a maximum of 50 routes.  <b>Note:</b> ECMP should not be enabled for BGP.	ExtremeSwitching X460-G2	128
	ExtremeSwitching , X465, X695	300
	ExtremeSwitching X450-G2	100
<b>BGP (peer groups)</b> —maximum number of BGP peer groups.	ExtremeSwitching X460-G2, X465, X695	64
	ExtremeSwitching X450-G2	50
<b>BGP (policy entries)</b> —maximum number of BGP policy entries per route policy.	ExtremeSwitching X460-G2, X465, X695	256
	ExtremeSwitching X450-G2	204
<b>BGP (policy statements)</b> —maximum number of BGP policy statements per route policy.	ExtremeSwitching X460-G2, X465, X695	1,024
	ExtremeSwitching X450-G2	820
<b>BGP multicast address-family routes</b> —maximum number of multicast address-family routes.	ExtremeSwitching X460-G2, X465, X695	25,000
	ExtremeSwitching X450-G2	20,000



**Table 10: Supported Limits for Core License (continued)**

Metric	Product	Limit
<b>BGP (unicast address-family routes)</b> —maximum number of unicast address-family routes.	ExtremeSwitching X460-G2, X465, X695 (at default)	25,000
	ExtremeSwitching X465 (with ALPM enabled)	100,000
	ExtremeSwitching X450-G2	20,000
<b>BGP (non-unique routes)</b> —maximum number of non-unique BGP routes.	ExtremeSwitching X460-G2, X465, X695	25,000
	ExtremeSwitching X450-G2	20,000
<b>BGP ECMP</b> —maximum number of equal cost paths per multipath for BGP and BGPv6.	ExtremeSwitching X460-G2, X465, X695	2, 4, 8, 16, 32, or 64
	ExtremeSwitching X450-G2	64
<b>BGPv6 (unicast address-family routes)</b> —maximum number of unicast address family routes.	ExtremeSwitching X460-G2	6,000
	ExtremeSwitching, X465, X695	10,000
	ExtremeSwitching X450-G2	4,800
<b>BGPv6 (non-unique routes)</b> —maximum number of non-unique BGP routes.	ExtremeSwitching X460-G2	18,000
	ExtremeSwitching X465, X695	24,000
	ExtremeSwitching X450-G2	14,000
<b>EVPN EVI instances</b> —maximum number of EVI instances.	ExtremeSwitching X465, X695	1,024
<b>EVPN LAGs</b> —maximum number of LAGs.	ExtremeSwitching X465, X695	128
<b>GRE Tunnels</b> —maximum number of GRE tunnels.	ExtremeSwitching X460-G2, X450-G2, X465, X695	255
	ExtremeSwitching X440-G2	N/A
<b>IS-IS adjacencies</b> —maximum number of supported IS-IS adjacencies.	ExtremeSwitching X460-G2, X465, X695	128
	ExtremeSwitching X450-G2	N/A
<b>IS-IS ECMP</b> —maximum number of equal cost paths per multipath for IS-IS.	ExtremeSwitching X460-G2, X465, X695	2, 4, or 8
	ExtremeSwitching X450-G2	N/A
<b>IS-IS interfaces</b> —maximum number of interfaces that can support IS-IS.	ExtremeSwitching X460-G2, X465, X695	255
	ExtremeSwitching X450-G2	N/A
<b>IS-IS routers in an area</b> —recommended maximum number of IS-IS routers in an area.	ExtremeSwitching X460-G2, X465, X695	256
	ExtremeSwitching X450-G2	N/A
<b>IS-IS route origination</b> —recommended maximum number of routes that can be originated by an IS-IS node.	ExtremeSwitching X460-G2, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A

**Table 10: Supported Limits for Core License (continued)**

Metric	Product	Limit
<b>IS-IS IPv4 L1 routes in an L1 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	25,000 N/A
<b>IS-IS IPv4 L2 routes</b> —recommended maximum number of IS-IS Level 2 routes.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	25,000 N/A
<b>IS-IS IPv4 L1 routes in an L1/L2 router</b> —recommended maximum number of IS-IS Level 1 routes in an L1/L2 IS-IS router.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	20,000 N/A
<b>IS-IS IPv6 L1 routes in an L1 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	10,000 N/A
<b>IS-IS IPv6 L2 routes</b> —recommended maximum number of IS-IS Level 2 routes.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	10,000 N/A
<b>IS-IS IPv6 L1 routes in an L1/L2 router</b> —recommended maximum number of IS-IS Level 1 routes in a L1/L2 router.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	10,000 N/A
<b>IS-IS IPv4/IPv6 L1 routes in an L1 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	20,000 N/A
<b>IS-IS IPv4/IPv6 L2 routes in an L2 router</b> —recommended maximum number of IS-IS Level 2 routes in a Level 2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	ExtremeSwitching X460-G2, X465, X695 ExtremeSwitching X450-G2	20,000 N/A

**Table 10: Supported Limits for Core License (continued)**

Metric	Product	Limit
<b>IS-IS IPv4/IPv6 L1 routes in an L1/L2 router</b> —recommended maximum number of IS-IS Level 1 routes in a Level 1/Level2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	ExtremeSwitching X460-G2, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A
<b>MSDP active peers</b> —maximum number of active MSDP peers.	ExtremeSwitching X450-G2, X460-G2, X465, X695	64
<b>MSDP SA cache entries</b> —maximum number of entries in SA cache.	ExtremeSwitching X465, X695	14,000
	ExtremeSwitching X450-G2	8,000
	ExtremeSwitching X460-G2	10,000
<b>MSDP maximum mesh groups</b> —maximum number of MSDP mesh groups.	ExtremeSwitching X450-G2, X460-G2, X465, X695	16
<b>OSPFv2/v3 ECMP</b> —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching X460-G2, X450-G2, X465, X695	64
<b>OSPFv2 areas</b> —as an ABR, how many OSPF areas are supported within the same switch.	ExtremeSwitching X450-G2, X460-G2, X465, X695	8
<b>OSPFv2 external routes</b> —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching, X465, X695	10,000
	ExtremeSwitching X460-G2	5,000
	ExtremeSwitching X450-G2	4,000
<b>OSPFv2 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching, X465, X695	4,000
	ExtremeSwitching X460-G2	2,000
	ExtremeSwitching X450-G2	1,600
<b>OSPFv2 inter-vr or leaking routes</b> —recommended maximum number of inter-vr routes contained in an OSPF LSDB.	ExtremeSwitching, X465, X695, X460-G2	2,000
	ExtremeSwitching X450-G2, X440-G2	1,000
<b>OSPFv2 interfaces</b> —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching X460-G2, X465, X695	400
	ExtremeSwitching X450-G2	320

**Table 10: Supported Limits for Core License (continued)**

Metric	Product	Limit
<b>OSPFv2 links</b> —maximum number of links in the router LSA.	ExtremeSwitching X460-G2, X465, X695	400
	ExtremeSwitching X450-G2	320
<b>OSPFv2 neighbors</b> —maximum number of supported OSPF adjacencies.	ExtremeSwitching X460-G2, X465, X695	128
	ExtremeSwitching X450-G2	96
<b>OSPFv2 routers in a single area</b> —recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X465, X695	100
	ExtremeSwitching X460-G2	50
	ExtremeSwitching X450-G2	40
<b>OSPFv2 virtual links</b> —maximum number of supported OSPF virtual links.	ExtremeSwitching X460-G2, X465, X695	32
	ExtremeSwitching X450-G2	25
<b>OSPFv3 areas</b> —as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X465, X695	100
	ExtremeSwitching X460-G2	16
	ExtremeSwitching X450-G2	12
<b>OSPFv3 external routes</b> —recommended maximum number of external routes.	ExtremeSwitching X460-G2, X465, X695	10,000
	ExtremeSwitching X450-G2	7,500
<b>OSPFv3 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X465, X695	4,000
	ExtremeSwitching X460-G2	3,000
	ExtremeSwitching X450-G2	500
<b>OSPFv3 interfaces</b> —maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching X460-G2, X465, X695	256
	ExtremeSwitching X450-G2	192
<b>OSPFv3 neighbors</b> —maximum number of OSPFv3 neighbors.	ExtremeSwitching X460-G2, X465, X695	64
	ExtremeSwitching X450-G2	48
<b>OSPFv3 virtual links</b> —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching X460-G2, X465, X695	16
	ExtremeSwitching X450-G2	12
<b>PIM IPv4 (maximum interfaces)</b> —maximum number of PIM active interfaces.	ExtremeSwitching X450-G2, X460-G2, X465, X695	255
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X465, X695	180
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X465, X695	3,000 (depends on policy file limits)

**Table 10: Supported Limits for Core License (continued)**

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

## Notes for Limits Tables

- <sup>a</sup> The table shows the total available. When installing ACL rules bound to a set of ports, rules are replicated for each port if there are ACL counters and counter compression is not enabled, or if the ports are extended ports.
- <sup>c</sup> When there are BFD sessions with minimal timer, sessions with default timer should not be used.
- <sup>f</sup> Effective capacity varies based on actual MAC addresses and VLAN IDs used and hash algorithm selected.

- 
- <sup>g</sup> Based on "configure forwarding internal-tables more l2".
  - <sup>h</sup> Based on "configure forwarding internal-tables more l3-and-ipmc".
  - <sup>j</sup> The limit depends on setting configured with configure iproute reserved-entries.
  - <sup>m</sup> The IPv4 and IPv6 multicast entries share the same hardware tables, so the effective number of IPv6 multicast entries depends on the number of IPv4 multicast entries present and vice versa.
  - <sup>n</sup> If IGMP and MLD are simultaneously configured on the switch, the number of effective subscribers supported are lessened accordingly.
  - <sup>o</sup> The total of all PBR next hops on all flow redirects should not exceed 4,096.
  - <sup>p</sup> The number of XNV authentications supported based on system ACL limitations.
  - <sup>q</sup> Based on "configure forwarding internal-tables more routes".
  - <sup>r</sup> Based on configure forwarding internal-tables more routes ipv6-mask-length 128.
  - <sup>s</sup> Based on configure forwarding internal-tables more l3-and-ipmc or configure forwarding internal-tables l2-and-l3.



# Open Issues, Known Behaviors, and Resolved Issues

---

[Open Issues in ExtremeXOS 33.4.1](#) on page 87

[Known Behaviors](#) on page 87

[Resolved Issues in ExtremeXOS 33.4.1](#) on page 88

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 in ExtremeXOS 33.4.1

---

There are no open issues for supported features found in this version.

## Known Behaviors

---

The following table lists limitations in system architecture that have yet to be resolved.

**Table 11: Known Issues, Platform-Specific, and Feature Change Requests (CRs) in 33.4.1**

Defect Number	Description
EXOS-38147	Switches that are running previous software versions cannot be cloned to the version 33.4.1. Workaround: In order to clone the switch, you must first upgrade the switch to version 33.4.1 in both partitions, and then configure the active boot partition of the cloning switch to be the same as the 'clone master node'.

## Resolved Issues in ExtremeXOS 33.4.1

The following issues were resolved in ExtremeXOS 33.4.1. Version 33.4.1 includes all fixes up to and including versions 31.6, 31.7, 32.1, 32.2, 32.3, 32.4, 32.5, 32.6.x, 32.7.x, 33.2.1, and 33.3.1.

**Table 12: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 33.4.1**

Defect Number	Description
<b>General</b>	
CFD-12301	VLAN auto-move should not work on Netlogin enabled ports.
CFD-12618	Inconsistent logging behavior when a failsafe login fails.
CFD-12790	Need to set 'secure' attribute for any cookies that are sent over a SSL/TLS connection.
CFD-12792	While connecting to the switch via chalet, missing 'httponly' cookie attribute.
CFD-13133	If multiple ports with BASET optics flap very quickly, some ports remain in the Ready state.
CFD-13226	Output of the <b>show meter out-of-profile ports []</b> command is not displaying counter values.
CFD-13229	Not all FA assignments are sent from the FA proxy to the FA server in certain scenarios.
CFD-13564	Signal 11 crash of dcbgp process.
CFD-13582	BGP session is not established due to segmentation fault after restarting the exabgp in docker.
CFD-13601	FA bindings are getting removed on receiving LLDP packet without "Fabric Attach TLV".
CFD-13636	Policy process signal 6 crash occurs in X465.
CFD-13658	IDM role based VLANs are not working as expected.
CFD-13694	Dynamic VLANs are created if ISID mapping is configured for a VLAN without any configured user tag.
CFD-13729	Memory is getting depleted by CLI process after installing the image using the <b>install image inactive</b> command.
CFD-13772	The <b>configure iparp proxy vlan all entry-required</b> command does not remove VLAN entries from existing configuration.
CFD-13796	BGP route failover delayed after BFD session goes down.
CFD-13846	SNMPmaster process crash occurs when configuring the snmp username with a space.
CFD-13912	STP related configuration is lost on the master port of the LAG when sharing is disabled/enabled even though auto-bind is enabled for that VLAN.
CFD-14029	Switch reboots due to EDP process crash while polling an OID with wrong table indices.



**Table 12: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 33.4.1 (continued)**

Defect Number	Description
CFD-14089	Policy profile names with a colon/semicolon are created despite throwing a warning.
CFD-14127	A memory leak is observed in the OSPF process when an IP address is continuously configured and removed on a VLAN interface.
CFD-14163	Setting the dot1qVlanStaticRowStatus for a VLAN that is not present on the switch causes the VLAN process to crash.
CFD-14177	devmgr process signal 11 crash was seen after running the <b>unconfiguring vpex slot</b> command.
CFD-14182	IGMP snooping entries are checkpoints to wrong MLAG ports between MLAG peers.
CFD-14192	User account does not have permission to run <b>show fabric attach</b> commands.
<b>SummitStack</b>	
CFD-13446	Incorrect value is returned when polling the IfOperstatus of a stack slot that's powered off.
<b>X435 Switches</b>	
CFD-13709	X435 switches stuck in DHCP cycle when factory defaulting the switch.
<b>X440-G2</b>	
CFD-13967	Couldn't enable policy on the switch since hardware resources could not be reserved for the process.