



# ExtremeXOS Release Notes

Software Version ExtremeXOS 30.7.1-Patch1-23

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# Preface

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This section describes the text conventions used in this document, where you can find additional information, and how you can provide feedback to us.

## Conventions

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This section discusses the conventions used in this guide.

### Text Conventions



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

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

**Table 1: Notes and warnings**

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

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

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

**Table 2: Text**

Convention	Description
screen displays	This typeface indicates command syntax, or represents information as it appears 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>
Words in <i>italicized type</i>	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.
<b>NEW!</b>	New information. In a PDF, this is searchable text.

**Table 3: Command syntax**

Convention	Description
<b>bold text</b>	Bold text indicates command names, keywords, and command options.
<i>italic text</i>	Italic text indicates variable content.
[ ]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ <b>x</b>   <b>y</b>   <b>z</b> }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
<b>x</b>   <b>y</b>	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, such as passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, <i>member</i> [ <i>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 ExtremeXOS 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 ExtremeXOS command documentation (see the Extreme Documentation page at [www.extremenetworks.com/documentation/](http://www.extremenetworks.com/documentation/)). In many cases, although the command is available on all platforms, each platform uses specific keywords. These keywords specific to each platform are shown in the Syntax Description and discussed in the Usage Guidelines sections.

## Terminology

When features, functionality, or operation is specific to a switch 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 *switch*.

## Providing Feedback

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The Information Development team at Extreme Networks has made every effort to ensure the accuracy and completeness of this document. We are always striving to improve our documentation and help you work better, 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 in the document.
- Broken links or usability issues.

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- In a web browser, select the feedback icon and complete the online feedback form.
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Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

## Getting Help

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

### Extreme Portal

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

### The Hub

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

### Call GTAC

For immediate support: (800) 998 2408 (toll-free in U.S. and Canada) or 1 (408) 579 2826. For the support phone number in your country, visit: [www.extremenetworks.com/support/contact](http://www.extremenetworks.com/support/contact)

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

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

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3. Select the products for which you would like to receive notifications.



### Note

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

4. Select **Submit**.

## Related Publications

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### ExtremeXOS Publications

- [ACL Solutions Guide](#)
- [ExtremeXOS 30.7 Command Reference Guide](#)
- [ExtremeXOS 30.7 EMS Messages Catalog](#)
- [ExtremeXOS 30.7 Feature License Requirements](#)
- [ExtremeXOS 30.7 User Guide](#)
- [ExtremeXOS Quick Guide](#)
- [ExtremeXOS Release Notes](#)
- [Extreme Hardware/Software Compatibility and Recommendation Matrices](#)



- *Extreme Optics Compatibility*
- *Switch Configuration with Chalet for ExtremeXOS 21.x and Later*
- *Using AVB with Extreme Switches*

## Extreme Management Center Publications

- *Extreme Management Center User Guide*

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# Overview

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- [Extreme Switch Security Assessment on page 32](#)

These release notes document ExtremeXOS 30.7, which adds features and resolves software deficiencies.

## Security Information

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The following section covers important security information for ExtremeXOS 30.7.

### Linux Kernel

ExtremeXOS 30.7 uses Linux Kernel 4.14.

### OpenSSL Version

ExtremeXOS 30.7 uses FIPS openssl-fips-2.0.16.

## Upgrading ExtremeXOS

For instructions about upgrading ExtremeXOS software, see "Software Upgrade and Boot Options" in the [ExtremeXOS 30.7 User Guide](#).

Beginning with ExtremeXOS 12.1, 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 error message `Error: Image can only be installed to the non-active partition.` appears. An ExtremeXOS modular software package (.xmod file) can still be downloaded and installed on either the active or alternate partition.

### Issue Upgrading to ExtremeXOS 30.7 Using ExtremeCloud on ExtremeSwitching X435 Switches

For ExtremeSwitching X435 switches with 8-port module, when using ExtremeCloud IQ to download ExtremeXOS 30.7, the switch might become unreachable by ExtremeCloud IQ after the switch reboots and comes up running ExtremeXOS 30.7. This only occurs when using DHCP to obtain an IP address on the switch.

When upgrading from ExtremeXOS 30.5 or 30.6, or any patches of these two releases, you need to logon to the switch using SSH (SSH access is available using ExtremeCloud IQ SSH proxy feature) and perform one of the following options:



#### Note

ExtremeXOS 30.5 and its patch releases only support manual upgrading of images.

- **DHCP**—Run the command `enable dhcp vlan Default`, and then save the configuration. This assumes the VLAN is "Default". If not default VLAN, run `enable dhcp vlan <X>`.
- **Static IP Address**—Statically configure IP address and default gateway on the VLAN for external management access, and then save the configuration.
- **Unconfigure Switch**—Download ExtremeXOS 30.7 from an external site—not from the ExtremeCloud IQ URL, run the command `unconfigure switch all`, and then reboot.

### EVPN: Upgrading to ExtremeXOS 30.7 and Later

When upgrading to ExtremeXOS and later, the following limitations for EVPN apply (see defect EXOS-26729 in [Open Issues](#) on page 86).

Do not configure a LAG port on more than:

- With EVPN and BGP Auto-peering enabled: 75 VLANs
- With EVPN and static BGP configuration: 120 VLANs

Alternatively, you can avoid these limits using a static port share that does not specify the LACP protocol.



#### Note

The LACP protocol is used if explicitly configured in the sharing commands. The preceding limitations also apply to any MLAGs using an LACP-enabled port share.

## Stacking: Upgrading from ExtremeXOS 30.2 and Earlier

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

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

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

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

## Extended Edge Switching Image Download Issue

If you are upgrading an Extended Edge Switching configuration (controlling bridge (CB) and bridge port extenders (BPEs)) from either ExtremeXOS 22.7.1 or earlier or ExtremeXOS 30.2.1 or earlier to ExtremeXOS 30.3 or later, you cannot upgrade automatically using the combined `.lst` file. Instead, you must perform a manual upgrade. ExtremeXOS 22.7.1-Patch1-3 and later do *not* have this issue.

To perform a manual upgrade:

1. Upgrade the CBs using `.xos` file.
2. Upgrade the BPEs using the `.xmod` file.

For more information about manual upgrades, see the *Manual Upgrading* section in the *Extended Edge Switching Chapter* in the [ExtremeXOS 30.7 User Guide](#).

After this one-time upgrade, you can perform all subsequent ExtremeXOS upgrades automatically using the `.lst` file. For more information about automatic upgrades, see the *Automatic Upgrading* section in the *Extended Edge Switching Chapter* in the [ExtremeXOS 30.7 User Guide](#).

If you attempt the upgrade with the `.lst` file, and the following error occurs:

```
# download image 192.0.2.99 onie-30.4.1.2-vpex_controlling_bridge.lst
Note: The inactive partition (secondary) will be used for installation.
Downloading tftp://192.0.2.99/onie-30.4.1.2-vpex_controlling_bridge.lst
.....
Extracting /scratch/dnld/onie-30.4.1.2.xos from tftp://192.0.2.99/onie-30.4.1.2-
vpex_controlling_bridge.lst
Error: Cannot install /scratch/dnld/onie-30.4.1.2.xos. [Errno 28] No space left on device
```

Retry the upgrade using the manual upgrade procedure described above.

If manual installation of the `.xos` or `.xmod` file fails with the same error, the `.1st` file may still be present. To remove this file, use the following command before retrying the manual upgrade procedure:

```
# run script shell.py "rm /scratch/dnld/*"
```

## Open vSwitch Database Management Protocol (OVSDB) End of Support

Open vSwitch Database Management Protocol (OVSDB) is not supported starting with ExtremeXOS 30.5.

For users interested in using OVSDB, the most stable version of ExtremeXOS for OVSDB support is 16.2.

## Default ExtremeXOS® Settings

Table 4 shows the default settings for ExtremeXOS starting with version 22.6, and shows any changes that have been made to these settings and in what version these changes were made.

**Table 4: Default ExtremeXOS Settings**

ExtremeXOS Feature	22.6 Settings	30.1 Settings	30.2 Settings	30.3 Settings	30.5 Settings	30.6 Settings	30.7 Settings
Account Lockout	After 3 consecutive login failures, account is locked for 5 minutes.						
AVB	Disabled.						
BFD Strict Session Protection	N/A.	N/A.		Disabled.			
BGP	Disabled.						
Bluetooth	N/A.	N/A.		Enabled.			
BOOTP Relay	Disabled.						
CDP	Enabled.						
Configuration auto save	Disabled.						
Clear-flow	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)**

ExtremeXOS Feature	22.6 Settings	30.1 Settings	30.2 Settings	30.3 Settings	30.5 Settings	30.6 Settings	30.7 Settings
Diagnostics	Admin level privileges required to show diagnostics .						
DHCP	Disabled.						Extreme IQ agent, enables DHCP on VR-Mgmt. See <a href="#">ExtremeCloud™ IQ Agent Support</a> on page 29.
DNS Cache Resolver and Analytics	N/A.	N/A.		Disabled.			
IPFIX	Disabled.						
EAPS	Disabled.						
EDP	Enabled.	Enabled on management port.					
ELRP	Disabled.						
ESRP	Disabled.						
Extended Edge Switching (VPEX)	Disabled.						
Identity Management	Disabled.						
IGMP	Enabled, set to IGMPv2 compatibility mode.						
IGMP Snooping	Enabled.						
IP Route Compression	Enabled.						

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

ExtremeXOS Feature	22.6 Settings	30.1 Settings	30.2 Settings	30.3 Settings	30.5 Settings	30.6 Settings	30.7 Settings
ISIS	Disabled.						
Log	Admin level privileges required to show log.						
Logging memory buffer	Generate an event when the logging memory buffer exceeds 90% of capacity.						
MAC Security	N/A	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					Access list (Unless upgrading to 30.5 with existing policy rules configuration, then the default is hierarchical.)	Hierarchical (Unless upgrading from 30.5 with a saved configuration set to access list.)	
OpenFlow	Disabled.				Not supported.		
OSPF	Disabled.						

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

ExtremeXOS Feature	22.6 Settings	30.1 Settings	30.2 Settings	30.3 Settings	30.5 Settings	30.6 Settings	30.7 Settings
OVSDB	Disabled.						
Passwords	Plain text password entry not allowed.						
PIM	Disabled.						
PIM Snooping	Disabled.						
PoE Fast PoE Perpetual PoE	Enabled. N/A. N/A.			Enabled. Disabled. Disabled.			
RADIUS	Disabled for both switch management and network login.						
RIP	Disabled.						
RMON	Disabled. However, even in the disabled state, the switch responds to RMON queries and sets for alarms and events.						
sFlow	Disabled.						
SNMP server	Disabled.						
SSH	Disabled.						
Stacking	Disabled, except for X450-G2.	—	Disabled, except for X450-G2, X465.	—	—		
Stacking auto-discovery	N/A.	N/A.		Enabled.			
STP	Enabled.						
Syslog	Disabled.						



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

ExtremeXOS Feature	22.6 Settings	30.1 Settings	30.2 Settings	30.3 Settings	30.5 Settings	30.6 Settings	30.7 Settings
TACACS	Disabled.						
Telnet	Disabled.						
VPLS	All newly created VPLS instances are enabled.						
Watchdog	Enabled.						
Web HTTP server	Disabled.						

## ExtremeXOS 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: ExtremeXOS Image Types (Prefixes)**

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

## Memory Card Keyword Deprecated

The **memorycard** keyword is deprecated because the physical medium is no longer an actual memory card, but instead USB devices. USB storage devices are located at `/usr/local/ext`.

### CLI Commands with Deprecated **memorycard** Option

- `eject memorycard`—replaced with `usb-device`
- `save debug tracefiles memorycard`—replaced with `directory_path`
- `show memorycard`— replaced with `switchmounts`

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

## CLI Commands with Changed Default File Locations

By default, the following commands now use the location `/usr/local/tmp` for internal memory, and `/usr/local/ext` for removable USB storage devices.

```
configure debug core-dumps [ off | directory_path]
```

```
cp old_name new_name
```

```
ls file_name
```

```
mv old_name new_name
```

```
rm file_name
```

```
tftp [ ip-address | host-name ] { -v vr_name } { -b block_size } [ -g | -p ] [ -l local-file { -r remote-file } | -r remote-file { -l local-file } ]
```

The following commands now have a `local-file` option to allow installation from the local file system (`/usr/local/`).

```
install image
```

```
install bootrom
```

## New Switch Diagnostics for ExtremeSwitching X465 Series Switches

ExtremeXOS 30.7 includes an updated version of switch diagnostics for ExtremeSwitching X465 series switches that includes an enhanced PoE diagnostics test. Install the ExtremeXOS 30.7 ONIE diagnostics XMOD package to upgrade to switch diagnostics version 1.12.

For information about installing an XMOD file, see the [Installing a Modular Software Package](#) topic in the [ExtremeXOS 30.7 User Guide](#).

## Firmware Update Needed for ExtremeSwitching X465 Series Switches

ExtremeXOS 30.7 includes an update to the ExtremeSwitching X465 series switches FPGA firmware (version 1.2.42) to remove errors that might appear when hot plugging a fan module (see defect [EXOS-78535](#) in the topic [Resolved Issues in ExtremeXOS 30.7](#) on page 89).

To upgrade, do one of the following:

- *When* installing ExtremeXOS 30.7, accept the firmware upgrade when prompted (see example below).
- *After* ExtremeXOS 30.7 is installed, run the CLI command `install firmware`.

To verify the new FPGA version is installed correctly, run the command `show version detail`:

```
X465-24XE.1 # show version detail
Switch          : 800974-01-AG 1924F-10492 Rev AG BootROM: N/A      IMG: 30.7.0.544
                 FPGA: 1.2.42 CPLD: 1.1.18 PPLD0: 1.1.8 PPLD1: 1.1.8 VPLD: 1.1.13
```

## Example of Upgrading FPGA Firmware When Installing ExtremeXOS 30.7

```
X465-24XE.10 # download image 10.68.9.32 rmgr/onie-30.7.0.544.xos
Note: The inactive partition (secondary) will be used for installation.
Do you want to install image after downloading? (y - yes, n - no, <cr> - cancel) Yes

Downloading to
Switch.....
.....
.....
This image will be used only after rebooting the switch!
Installing to secondary partition!

Installing to Switch.....
Image installed successfully
Installing FPGA/PLD image(s). Do you want to continue?
(y - yes, n - no, <cr> - cancel) Yes
Installing firmware...
.....
.....

Firmware image has been updated successfully.

The FPGA/PLD image(s) were installed successfully
and will be activated upon the next system reboot.

This image will be used only after rebooting the switch!
```

## New and Corrected Features in ExtremeXOS 30.7

This section lists the new and corrected features supported in the 30.7 software:

### ExtremeCloud IQ Agent Enhancements

For changes to Cloud IQ, see [ExtremeCloud™ IQ Agent Support](#) on page 29.

### V300 Bridge Port Extenders (BPEs) Support Extended Edge Switching Rings

For ExtremeXOS 30.7, V300 bridge port extenders (BPEs) support Extended Edge Switching rings.

Extended Edge Switching rings allow two Extended Edge Switching (VPEX) cascades to be joined together to form a control plane ring. If a link breaks or a BPE otherwise leaves, the remaining BPEs reform two data plane cascades, thus keeping both control and data plane connectivity to the controlling bridge (CB) alive. This provides a redundant connection from any BPE in the ring to the CB.

#### *Supported Platforms*

**Controlling bridges:** ExtremeSwitching X670-G2, X465, X590, X690 series switches.

BPEs:

**Table 6: V300 BPE Models**

Model Numbers	Description
V300-8P-2T-W	V300 Series 8 port 10/100/1000BASE-T POE+ ports half/full duplex, 2x1000 BASE-T ports, PoE powered 802.3bt Type 4, fanless.  <b>Note:</b> The V300-8P-2T-W model can only be directly attached to a controlling bridge. It cannot be cascaded.
V300-8P-2X	V300 Series 8 port 10/100/1000BASE-T POE+ ports half/full duplex, 2 × SFP+ ports, fanless.
V300-8T-2X	V300 Series 8 port 10/100/1000BASE-T ports half/full duplex, 2 × SFP+ ports, fanless.
V300HT-8P-2X	V300 Series 8 port 10/100/1000BASE-T POE+ ports half/full duplex, 2 × SFP+ ports, fanless, high-temperature model.
V300HT-8T-2X	V300 Series 8 port 10/100/1000BASE-T ports half/full duplex, 2 × SFP+ ports, fanless, high-temperature model.

**Table 7: V400 BPE Models**

Model Numbers	Description
V400-24t-10GE2	V400 Series 24 10/100/1000BASE-T, 2 1000/10GBaseX unpopulated SFP+ ports, fixed power supply and fan.
V400-24p-10GE2	V400 Series 24 10/100/1000BASE-T PoE+, 2 1000/10GBaseX unpopulated SFP+ ports, fixed power supply and fans, and optional redundant power supply.
V400-48t-10GE4	V400 Series 48 10/100/1000BASE-T, 4 1000/10GBaseX unpopulated SFP+ ports, fixed power supply and fan.
V400-48p-10GE4	V400 Series 48 10/100/1000BASE-T PoE+, 4 1000/10GBaseX unpopulated SFP+ ports, fixed power supply, fans, and optional redundant power supply.

## Audio Video Bridging (AVB) Supported on ExtremeSwitching X870 and X695 Series Switches

For ExtremeXOS 30.7, Audio Video Bridging (AVB) is supported on the ExtremeSwitching X870 and X695 series switches.

AVB supports the deployment of professional quality audio and/or video (AV) over standard Ethernet while coexisting with other "legacy" (or non-AV) Ethernet traffic. This supports "Network Convergence," or using one simple standard Ethernet network for all communication needs.

AVB functionality is automatically included in the Advanced Edge License for the ExtremeSwitching X870 and X695 series switches. For more information about licenses, see the [ExtremeXOS 30.7 Feature License Requirements](#).



**Note**

All other switches that support AVB, besides the ExtremeSwitching X870 and X695 series switches, require that you separately purchase and install the AVB Feature Pack to enable AVB functionality.

*Supported Platforms*

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X620, X670-G2, X695, and X870 series switches.

## Joint Interoperability Test Command (JITC) Enhancements and SSH Upgrade to 8.1.p1

Several enhancements have been implemented to support Joint Interoperability Test Command (JITC) compliance.

The following table lists the enhancements for JITC compliance.

Vuln ID	JITC Requirement	New ExtremeXOS Behavior
V-55055	The network device must enforce the limit of three consecutive invalid logon attempts by a user during a 15-minute time period.	Three successive failed logons locks the account for 15 minutes.
V-55061	Upon successful logon, the network device must notify the administrator of the date and time of the last logon.	After successfully logging on, the time of the last successful logon appears.
V-55063	Upon successful logon, the network device must notify the administrator of the number of unsuccessful logon attempts since the last successful logon.	After successfully logging on, the number of unsuccessful logons appears.
V-55127	The network device must require that when a password is changed that at least eight characters are changed in the new password.	New command (see below) provided to configure the minimum number of different characters for changed passwords.
V-55135	The network device must enforce 24 hours as the minimum password lifetime.	New command (see below) provided to configure the minimum lifespan for passwords.
V-55291	The network device must notify the administrator of the number of successful logon attempts occurring during an organization-defined time period.	The number of logons since the previous reboot of the switch appears after logging on successfully.

Additionally, OpenSSH server and client is upgraded from 7.5p1 to 8.1p1. Also, a new command is provided that configures a grace timeout period. When this timeout period expires, the server disconnects if the user has not completed logon attempt.

Support for following ciphers and macs are removed, since these are not supported in openssh 8.1p1:

- **Ciphers:** blowfish-cbc, cast128-cbc, arcfour, arcfour256, arcfour128
- **MACs:** hmac-ripemd160-etm@openssh.com, hmac-ripemd160, hmac-ripemd160@openssh.com

#### *Supported Platforms*

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, and X870 series switches.

#### *New CLI Commands*

```
configure ssh2 login-grace-timeout seconds
```

```
configure account [all|name] password-policy min-different-characters  
[count]
```

```
configure account [all | name] password-policy min-age [num_days | none]
```

#### *Changed CLI Commands*

The following show command now shows logon grace timeout period:

```
show ssh2
```

The following commands no longer have the unsupported ciphers and MACs as options:

```
configure ssh2 enable [cipher [cipher | all] | mac [ mac | all]]
```

```
scp2 {cipher cipher} {mac mac} {compression [on | off]} {port portnum}  
{vr vr_name} user [hostname | ipaddress]:remote_file local_file
```

```
ssh2 {cipher cipher} {mac mac} {port portnum} {compression [on | off]}  
{user username} {username} [host | ipaddress] {remote command} {vr  
vr_name}
```

The following show command now shows the minimum different password characters:

```
show accounts password-policy
```

## Enhanced VXLAN Support for Extended Edge Switching

For Extended Edge Switching bridge port extenders (BPEs) extended ports are now supported as untagged member in VXLAN tenant VLANs.

#### *Supported Platforms*

**Controlling bridges:** ExtremeSwitching X670-G2, X465, X590, X690 series switches.

BPEs:

**Table 8: V400 BPE Models**

Model Numbers	Description
V400-24t-10GE2	V400 Series 24 10/100/1000BASE-T, 2 1000/10GBaseX unpopulated SFP+ ports, fixed power supply and fan.
V400-24p-10GE2	V400 Series 24 10/100/1000BASE-T PoE+, 2 1000/10GBaseX unpopulated SFP+ ports, fixed power supply and fans, and optional redundant power supply.
V400-48t-10GE4	V400 Series 48 10/100/1000BASE-T, 4 1000/10GBaseX unpopulated SFP+ ports, fixed power supply and fan.
V400-48p-10GE4	V400 Series 48 10/100/1000BASE-T PoE+, 4 1000/10GBaseX unpopulated SFP+ ports, fixed power supply, fans, and optional redundant power supply.

**Table 9: V300 BPE Models**

Model Numbers	Description
V300-8P-2T-W	V300 Series 8 port 10/100/1000BASE-T POE+ ports half/full duplex, 2x1000 BASE-T ports, PoE powered 802.3bt Type 4, fanless.  <b>Note:</b> The V300-8P-2T-W model can only be directly attached to a controlling bridge. It cannot be cascaded.
V300-8P-2X	V300 Series 8 port 10/100/1000BASE-T POE+ ports half/full duplex, 2 × SFP+ ports, fanless.
V300-8T-2X	V300 Series 8 port 10/100/1000BASE-T ports half/full duplex, 2 × SFP+ ports, fanless.
V300HT-8P-2X	V300 Series 8 port 10/100/1000BASE-T POE+ ports half/full duplex, 2 × SFP+ ports, fanless, high-temperature model.
V300HT-8T-2X	V300 Series 8 port 10/100/1000BASE-T ports half/full duplex, 2 × SFP+ ports, fanless, high-temperature model.

## New SNMP Traps

ExtremeXOS 30.7 introduces two new SNMP traps messages that are sent to registered trap receivers (along with log messages) for events that are related to service degradation for the following conditions:

- System is low on memory

```
Memory issues:
<Info:Kern.Info> : no more memory
<Info:Kern.card.Info> : no more memory
<Warn:HAL.Sys.Warning> MSM-A: Sys-Health-Check Card 8 is low on OS Memory. Total/Free
= 512888/216 Kb. AsyncQ Current/Hi/Total/Last = 1255183/1255183/83465688/1849
```

- Sync queue is rising

```
Async queue issues:
<Error:Kern.Card.Error> Slot-3: async queue is growing (100008) type is 14860330,
customType is 42
```

This feature also introduces support for the new MIB *ETMONSERVICEABILITYTRAP*.

#### *Supported Platforms*

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, and X870 series switches.

## Show Network Login Sessions Command Enhanced

The command `show netlogin sessions` now shows Network Login (NetLogin) sessions for both policy mode and non-policy mode.

#### *Supported Platforms*

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, X870 series switches.

#### *Changed CLI Commands*

The following command now shows NetLogin sessions for both policy mode and non-policy mode:

```
show netlogin session {all | summary} {mac-address mac_address} {ports
ports} {agent [convergence-endpointdot1x | mac | web-based] }
```

## Event Log Shows Policy Applied to Network Login Client

The event log (EMS message) in ExtremeXOS 30.7 shows the policy applied to the Network Login (NetLogin) client. If no policy is applied, the name appears as "None".

Examples:

```
<Info:nl.ClientAuthenticated> Network Login MAC user 000000000B00 logged in MAC
00:00:00:00:0B:00 port 15 VLAN(s) "n2" policy "Extreme", authentication Locally
```

```
<Info:nl.ClientAuthenticated> Network Login MAC user 000000000B00 logged in MAC
00:00:00:00:0B:00 port 15 VLAN(s) "n2" policy "None", authentication Locally
```

#### *Supported Platforms*

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, X870 series switches.



## Ethernet Virtual Private Network (EVPN) Type 5 Routes Supported

For Ethernet Virtual Private Network (EVPN), Type 5 Routes are now supported, except for on the default VR.



### Note

This feature was released as a demonstration feature in ExtremeXOS 30.6. It is now fully supported in ExtremeXOS 30.7.

ExtremeXOS 30.7 also introduces a route type specifically for these EVPN routes designated by the prefix “evn”. This origin type now appears in the output of applicable show commands (see [Changed CLI Commands](#) on page 25). For consistency with the other route types, you can also change the EVPN route priority. The default priority value for EVPN is 1698 (one less than Auto-peering routes).

### Supported Platforms

ExtremeSwitching X465, X590, X690, X695 series switches.

### Limitations

The following are not supported:

- Switching through a VXLAN tunnel to a remote L3 Anycast gateway.
- Default VRs.



### Note

By default, when a peer is created, the following line appears in the BGP configuration:  
**enable bgp neighbor neighbor\_ip address-family l2vpn-evpn next-hop-unchanged**

This is harmless if L2VPN EVPN is not enabled for the peer. However, it is required if the L2VPN EVPN capability is enabled for a peer. The default for this capability and address family will be changed to enabled in a subsequent release.

### New CLI Commands

```
configure bgp evpn l3vni [vni_value | none] vr vr_name
```

```
show bgp evpn l3vni {vr vr_name}}
```

```
enable bgp export [static | direct] {address-family address_family}  
l2vpn-evpn {vr vr_name}
```

```
disable bgp export [static | direct] {address-family address_family}  
l2vpn-evpn {vr vr_name}
```

### Changed CLI Commands

Changes are underlined>.

```
show bgp routes {address-family [ipv4-unicast | ipv4-multicast | ipv6-unicast | ipv6-multicast | ipv4-vxlan | {l2vpn-evpn [inclusive-multicast | mac-ip | auto-discovery | esi | ip-prefix]}]} {detail} [ipv4-vxlan | all | as-path path-expression | community [no-advertise | no-export | no-export-subconfed | number community_number | autonomous-system-idbgp-
```

```

community] | network [any/netMaskLen | networkPrefixFilter] {exact}] {vr
vr_name}

show bgp {neighbor} remoteaddr {address-family [ipv4-unicast | ipv4-
multicast | ipv6-unicast | ipv6-multicast | ipv4-vxlan | {l2vpn-evpn
[inclusive-multicast | mac-ip | auto-discovery | esi | ip-prefix]]}]
[accepted-routes | received-routes | rejected-routes | transmitted-
routes] {detail} [all | as-path path-expression | community [no-
advertise | no-export | no-export-subconfed | number community_number |
autonomous-system-id : bgp-community] | network [any/netMaskLen |
networkPrefixFilter] {exact}]

show iproute mpls origin [bgp | blackhole | bootp | direct | ebgp | ibgp
| icmp | isis | isis-level-1 | isis-level-1-external | isis-level-2 |
isis-level-2-external | mpls evpn {signaling-protocol [ldp | rsvp-te |
static]] | ospf | ospf-extern1 | ospf-extern2 | ospf-inter | ospf-intra
| rip | static ] {unicast} {vr vrname}

show iproute origin [auto-peering | bgp | blackhole | bootp | direct |
ebgp | embgp | ibgp | icmp | imbgp | isis | isis-level-1 | isis-level-1-
external | isis-level-2 | isis-level-2-external | mbgp | mpls | evpn
{signaling-protocol [ldp | rsvp-te | static]] | ospf | ospf-extern1 |
ospf-extern2 | ospf-inter | ospf-intra | rip | static ] {unicast} {vr
vrname}

show iproute {ipv4} {priority | vlan vlan_name | permanent | ip_address
netmask | summary} {multicast | unicast} {vr vrname}}

configure iproute {ipv4} priority [auto-peering | blackhole | bootp |
ebgp | host-mobility | ibgp | icmp | isis | isis-level-1 | isis-level-1-
external | isis-level-2 | isis-level-2-external | mpls | ospf-as-
external | ospf-extern1 | ospf-extern2 | ospf-inter | ospf-intra | rip |
static | evpn] priority {vr vrname}

unconfigure iproute {ipv4} priority [all | blackhole | bootp | ebgp |
ibgp | icmp | isis | isis-level-1 | isis-level-1-external | isis-level-2
| isis-level-2-external | mpls | ospf-as-external | ospf-extern1 | ospf-
extern2 | ospf-inter | ospf-intra | rip | static | evpn] {vr vrname}

```

## IP and MAC Anycast

This feature enables you to configure the anycast gateway MAC to be used by VLANs that enable IP anycast. You can specify the same IP address and MAC address on all edge technology devices, which allows seamless IP mobility in the network for edge devices.



### Note

This feature was released as a demonstration feature in ExtremeXOS 30.6. It is now fully supported in ExtremeXOS 30.7.

*Supported Platforms*

ExtremeSwitching X450-G2, X460-G2, X670-G2, X435, X440-G2, X465, X590, X620, X690, X695, X870 series switches.

*Limitations*

Switching through a VXLAN tunnel to a remote L3 anycast gateway is not supported.

*New CLI Commands*

```
configure ip anycast mac [none | mac]

enable ip anycast {vlan} vlan_name

disable ip anycast {vlan} vlan_name

configure bootprelay dhcp-agent source-vlan {vlan_name} {vr vrid}

unconfigure bootprelay dhcp-agent source-vlan {vr vrid}
```

*Changed CLI Command*

Changes are underlined.

```
configure [ {vlan} vlan_name | vlan vlan_id] add secondary-ipaddress
anycast [ip_address {netmask} | ipNetmask]
```

For the following command, the **all** now has the capability to delete anycast IP addresses:

```
configure [ {vlan} vlan_name | vlan vlan_id] delete secondary-ipaddress
[ip_address | all]
```

The following show commands are changed to display IP anycast information:

```
show vlan

show ipconfig {ipv4} {vlan vlan_name}

show ipconfig ipv6 {vlan vlan_name | tunnel tunnel_name}

show bootprelay configuration {ipv4 | ipv6} {{vlan vlan_name } | {vr
vr_name}}
```

## Insight for Guest Virtual Machines (VMs) Enhancements

In addition to the standard abilities to start and stop a guest virtual machine (VM), you now have the ability to suspend, resume, and to save the state of a VM.

You also now have the ability to configure the VM's disk bus or controller. The default bus type is VirtIO, but some operating systems do not support this, and as a consequence, the VM will fail to boot. In this case, you can configure the bus type to IDE or SCSI.

### Supported Platforms

ExtremeSwitching X465-24MU, X465-2MU-24W, X465i-48W, and X465-24XE switches, X695 series switches.

### New CLI Commands

```
save vm vm_name state

configure vm vm_name disk bus-type bus_type

suspend vm vm_name

resume vm vm_name
```

### Changed CLI Commands

The following show command now displays the VM disk bus or controller type:

```
show vm {vm_name | detail}
```

## Ability to Disable Online Certificate Status Protocol (OCSP) for Transport Layer Security (TLS) Connections to Remote Syslog Servers

To comply with *RFC 6960* (X.509 Internet Public Key Infrastructure Online Certificate Status Protocol – OCSP), ExtremeXOS 30.7 provides the ability to disable Online Certificate Status Protocol (OCSP) check for Transport Layer Security (TLS) connections to remote Syslog servers.



### Note

Be sure you understand the ramifications of turning off OCSP if you chose to do so.

### Supported Platforms

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, and X870 series switches.

### New CLI Commands

```
configure syslog tls ocsp [on | off]
```

### Changed CLI Commands

The following show commands now displays the OCSP check status.

```
show log configuration
```

## Ability to Enable or Disable Digital Diagnostic Monitoring Interface (DDMI)

ExtremeXOS 30.7 allows you to enable or disable Digital Diagnostic Monitoring Interface (DDMI). DDMI provides critical system information about the installed optical modules.

### Supported Platforms

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, and X870 series switches.

*New CLI Commands*

```
configure ports [port_list | all] ddmi [on | off]
```

## RADIUS Service Type Attribute Change

In earlier versions of ExtremeXOS, RADIUS access requests sent "Framed-User" as the value for the attribute "Service-Type" for all authentication types.

For ExtremeXOS 30.7, in conformance with *RFC 2865*, RADIUS access requests now send the following values for the attribute "Service-Type" for the following authentication methods:

- Web-Auth—"Login"
- MAC-Auth—"Call Check"
- Dot1x—"Framed"

*Supported Platforms*

ExtremeSwitching X435, X440-G2, X450-G2, X460-G2, X465, X590, X620, X670-G2, X690, X695, and X870 series switches.

## ExtremeCloud™ IQ Agent Support

ExtremeXOS 30.7 supports ExtremeCloud IQ.

This release supports device discovery, basic monitoring, and introduces support for visibility into homogenous stacking. ExtremeXOS 30.7 also introduces the ability to configure an optional user-defined virtual router (VR) and address of the server for ExtremeCloud IQ agent to connect to. These values are used instead of any auto-detected values.

To configure a server VR or address, use the following command:

```
configure iqagent server [vr [vr-name | none] | ipaddress [fqdn | ip_address | none]]
```

To view information about IQ Agent, use the following command:

```
show iqagent discovery
```

ExtremeXOS 30.7 also adds support for the following switch models: X450-G2-48P-GE4, X460-G2-16MP-32P-10GE4, and X460-G2-24P-24HP-10GE.

**Note**

By default IQ Agent enables DHCP on the Management VR. To avoid this default behavior, apply an IP address on VR-Mgmt, and then disable DHCP.

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

**Table 10: Supported Platforms**

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

## Extreme Hardware/Software Compatibility and Recommendation Matrices

The *Extreme Hardware/Software Compatibility and Recommendation Matrices* provide information about the minimum version of ExtremeXOS software required to support switches.

For information about which optics are supported on which hardware platforms, and the minimum software version required, see <https://optics.extremenetworks.com/EXOS/>.

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 (Formerly NetSight)

ExtremeXOS 30.7 is compatible with the version of Extreme Management Center as shown in this table: [http://emc.extremenetworks.com/content/common/releasenotes/extended\\_firmware\\_support.htm](http://emc.extremenetworks.com/content/common/releasenotes/extended_firmware_support.htm)

## Supported MIBs

The Extreme Networks management information bases (MIBs) are located at [www.extremenetworks.com/support/policies/mibs/](http://www.extremenetworks.com/support/policies/mibs/).

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 30.7 User Guide](#).

## Tested Third-Party Products

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The following third-party products have been tested for ExtremeXOS 30.7.1-Patch1-23.

### Tested RADIUS Servers

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS

### Tested Third-Party Clients

The following third-party clients are fully tested:

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

### PoE Capable VoIP Phones

The following PoE capable VoIP phones are fully tested:

- Avaya 4620
- Avaya 4620SW IP telephone
- Avaya 9620
- Avaya 4602
- Avaya 9630
- Avaya 4621SW
- Avaya 4610
- Avaya 1616
- Avaya one-X
- Cisco 7970
- Cisco 7910
- Cisco 7960
- ShoreTel ShorePhone IP 212k
- ShoreTel ShorePhone IP 560
- ShoreTel ShorePhone IP 560g
- ShoreTel ShorePhone IP 8000
- ShoreTel ShorePhone IP BB 24
- Siemens OptiPoint 410 standard-2

- Siemens OpenStage 20
- Siemens OpenStage 40
- Siemens OpenStage 60
- Siemens OpenStage 80

## Extreme Switch Security Assessment

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### 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

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This chapter summarizes the supported limits in ExtremeXOS 30.7.

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

- [Supported Limits for Value Edge License](#)
- [Supported Limits for Edge License](#)
- [Supported Limits for Advanced Edge License](#)
- [Supported Limits for Core License](#)

For more information about licenses, see [ExtremeXOS 30.7 Feature License Requirements](#).

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

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

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

In the Extended Edge Switching architecture, Layer-2, Layer-3, and multicast packet forwarding and filtering operations take place on the controlling bridge. The controlling bridge switch and attached BPEs (V400 Virtual Port Extenders) constitute a single, extended switch system. Therefore, the Extended Edge Switching system assumes the scale and limits from the specific controlling bridge model (for example, Extended Edge Switching X670-G2 series switches) in use. For applicable limits, see the following tables for the controlling bridge you are using.

## Supported Limits for Value Edge License

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

**Table 11: 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 0 egress
<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
<b>CFM</b> —maximum number of CFM down end points.	ExtremeSwitching X435	32

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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	9,000 pps
<b>FDB (unicast blackhole entries)</b> —maximum number of unicast blackhole FDB entries.	ExtremeSwitching X435	16,019
<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>

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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
<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

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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
<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>

**Table 11: Supported Limits for Value 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 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
<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

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<p><b>Layer-2 IPMC forwarding caches</b>—(IGMP/MLD/PIM snooping) in mac-vlan mode.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>The internal lookup table configuration used is "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
<p><b>Layer-3 IPv4 Multicast</b>—maximum number of &lt;S,G,V&gt; entries installed in the hardware (IP multicast compression enabled).</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Limit value is the same for MVR senders, PIM Snooping entries, PIM SSM cache, IGMP senders, PIM cache.</li> <li>The internal lookup table configuration used is "more l3-and-ipmc".</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
<p><b>Layer-3 IPv6 Multicast</b>—maximum number of &lt;S,G,V&gt; entries installed in the hardware (IP multicast compression enabled).</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Limit value is the same for MLD sender per switch, PIM IPv6 cache.</li> <li>The internal lookup table configuration used is "more l3-and-ipmc".</li> <li>Assumes source-group-vlan mode as lookup key.</li> </ul>	ExtremeSwitching X435	700

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<p><b>Load sharing</b>—maximum number of load sharing groups.</p> <p><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.</p>	ExtremeSwitching X435	8
<p><b>Load sharing</b>—maximum number of ports per load-sharing group.</p>	ExtremeSwitching X435 (standalone only)	8
<p><b>Logged messages</b>—maximum number of messages logged locally on the system.</p>	ExtremeSwitching X435	20,000
<p><b>MAC-based security</b>—maximum number of MAC-based security policies.</p>	ExtremeSwitching X435	1,024
<p><b>MAC Locking</b>—Maximum number of MAC locking stations that can be learned on a port.</p>	ExtremeSwitching X435	64 (static MAC locking stations) 600 (first arrival MAC locking stations)
<p><b>Meters</b>—maximum number of meters.</p>	ExtremeSwitching X435	512
<p><b>Maximum mirroring instances.</b></p>	ExtremeSwitching X435	1 (egress)
<p><b>Mirroring (filters)</b>—maximum number of mirroring filters.</p> <p><b>Note:</b> This is the number of filters across all the active mirroring instances.</p>	ExtremeSwitching X435	128
<p><b>Mirroring, one-to-many (filters)</b>—maximum number of one-to-many mirroring filters.</p> <p><b>Note:</b> This is the number of filters across all the active mirroring instances.</p>	ExtremeSwitching X435	128
<p><b>Mirroring, one-to-many (monitor port)</b>—maximum number of one-to-many monitor ports.</p>	ExtremeSwitching X435	1



**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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
<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

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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
<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 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<p><b>Private VLANs</b>—maximum number of private VLANs with an IP address on the network VLAN.</p> <p><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.</p>	ExtremeSwitching X435	15
<p><b>Private VLANs</b>—maximum number of private VLANs in an L2-only environment.</p>	ExtremeSwitching X435	15
<p><b>Route policies</b>—suggested maximum number of lines in a route policy file.</p>	ExtremeSwitching X435	10,000
<p><b>Spanning Tree (maximum STPDs)</b>—maximum number of Spanning Tree Domains on port mode EMISTP.</p>	ExtremeSwitching X435	16
<p><b>Spanning Tree PVST+</b>—maximum number of port mode PVST domains.</p> <p><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, ExtremeSwitching X670-G2 supports 256 PVST domains (maximum), and 4,096 STP ports (maximum), so the maximum number of active ports per PVST domain would be 16 ports (4,096 ÷ 256).</p>	ExtremeSwitching X435	128
<p><b>Spanning Tree</b>—maximum number of multiple spanning tree instances (MSTI) domains.</p>	ExtremeSwitching X435	16
<p><b>Spanning Tree</b>—maximum number of VLANs per MSTI.</p> <p><b>Note:</b> Maximum number of 10 active ports per VLAN when all 100 VLANs are in one MSTI.</p>	ExtremeSwitching X435	100
<p><b>Spanning Tree</b>—maximum number of VLANs on all MSTP instances.</p>	ExtremeSwitching X435	256

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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.  <b>Note:</b> * Subject to other system limitations.	ExtremeSwitching X435	16 (local-only VRFs)
<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

**Table 11: Supported Limits for Value Edge License (continued)**

Metric	Product	Limit
<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	38,400
<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
<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

## Supported Limits for Edge License

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

**Table 12: 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 X620, X440-G2	1,024 ingress 256 egress
	ExtremeSwitching X670-G2, X450-G2, X460-G2	1,024 ingress 512 egress
	ExtremeSwitching X870, X690, X590, X465	2,048 ingress 512 egress
	ExtremeSwitching X695	6,000 ingress 2,000 egress
<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, X670-G2	4,096 ingress 1,024 egress
	ExtremeSwitching X620, X440-G2	2,048 ingress 512 egress
	ExtremeSwitching X870	3,072 ingress 1,024 egress
	ExtremeSwitching X690, X590, X465, X695	8,192 ingress 1,024 egress
<b>Access lists (policies)</b> —maximum number of rules in a single policy file in first stage (VFP).	ExtremeSwitching X450-G2, X460-G2	2,048 ingress only
	ExtremeSwitching X670-G2, X870, X690, X695	1,024 ingress only
	ExtremeSwitching X620, X440-G2	512 ingress only
	ExtremeSwitching X590, X465	2,048 ingress only
<b>Access lists (slices)</b> —number of ACL slices.	ExtremeSwitching X460-G2, X450-G2	16 ingress 4 egress
	ExtremeSwitching X670-G2, X690, X590, X465, X695	12 ingress 4 egress
	ExtremeSwitching X440-G2, X620	8 ingress 4 egress
	ExtremeSwitching X870	4 ingress 4 egress
<b>Access lists (slices)</b> —number of ACL slices in first stage (VFP).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X465, X620, X440-G2, X870, X690, X590, X695	4 ingress only

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>ACL Per Port Meters</b> —number of meters supported per port.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	16
<b>ACL port ranges.</b>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	32
<b>Meters Packets-Per-Second Capable.</b>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	Yes
<b>AVB (audio video bridging)</b> —maximum number of active streams.	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2	1,024
	ExtremeSwitching X465, X670-G2, X695, X870	4,096
	ExtremeSwitching X590, X690	N/A
<b>BFD sessions (Software Mode)</b> —maximum number of BFD sessions.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 (default timers—1 sec)	512
	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 (minimal timers—100 msec)	10 <sup>C</sup>
<b>BFD IPv4 sessions (Hardware Assisted)</b> —maximum number of IPv4 BFD sessions.	ExtremeSwitching X460-G2, X870, X690, X590, X465, X695	900 (PTP not enabled) 425 (PTP enabled) 256 (with 3 ms transmit interval)
<b>BFD IPv6 sessions (Hardware Assisted)</b> —maximum number of IPv6 BFD sessions.	ExtremeSwitching X460-G2, X870, X690, X590, X465, X695	425 (PTP not enabled)
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per virtual router.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X465, X620, X870, X690, X590, X695	8
<b>BOOTP/DHCP relay</b> —maximum number of BOOTP or DHCP servers per VLAN.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X465, X620, X870, X690, X590, X695	8
<b>BOOTP/DHCP relay</b> —maximum number of DHCPv4/v6 relay agents	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X465, X620, X870, X690, X590, X695	4,000
<b>Connectivity fault management (CFM)</b> —maximum number of CFM domains.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	8
<b>Note:</b> With Advanced Edge license or higher.		

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<p><b>CFM</b>—maximum number of CFM associations.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	256
<p><b>CFM</b>—maximum number of CFM up end points.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	32
<p><b>CFM</b>—maximum number of CFM down end points.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695  ExtremeSwitching X460-G2	32  256 (non-load shared ports) 32 (load shared ports)
<p><b>CFM</b>—maximum number of CFM remote end points per up/down end point.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	2,000
<p><b>CFM</b>—maximum number of dot1ag ports.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	128
<p><b>CFM</b>—maximum number of CFM segments.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	1,000
<p><b>CFM</b>—maximum number of MIPs.</p> <p><b>Note:</b> With Advanced Edge license or higher.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695	256
<p><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.</p>	ExtremeSwitching X460-G2, X670-G2, X450-G2	4,094
	ExtremeSwitching X440-G2, X620	1,024
	ExtremeSwitching X870	3,072
	ExtremeSwitching X690, X590, X465, X695	8,192



**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)</b> —maximum number of DCBX application TLVs.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695	8
<b>DHCPv6 Prefix Delegation Snooping</b> —Maximum number of DHCPv6 prefix delegation snooped entries.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695  with 50 DACLS with 500 DACLS	10 5
<b>EAPS domains</b> —maximum number of EAPS domains.  <b>Note:</b> An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.  <b>Note:</b> You can increase the number of domains by upgrading to the Advanced Edge license.	ExtremeSwitching X670-G2, X450-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695	4
<b>EAPsv1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2  ExtremeSwitching X870, X690, X590, X465, X695	1,000 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	4
<b>ERPSv1 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X870, X690, X590, X465, X695  ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2	2,000 1,000

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>ERPSv2 protected VLANs</b> —maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	2,000
	ExtremeSwitching X620, X440-G2	500
<b>ELSM (vlan-ports)</b> —maximum number of VLAN ports.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590, X465, X695	5,000
	ExtremeSwitching X440-G2	4,000
<b>Extended Edge Switching maximum BPEs</b> —maximum number of attached bridge port extenders (BPEs).	ExtremeSwitching X465, X590, X670-G2, X690	48
<b>Extended Edge Switching maximum cascade ports</b> —maximum number of upstream ports on bridge port extenders (BPEs).	ExtremeSwitching X465, X590, X670-G2, X690	2 on V400-24 and V300 models 4 on V400-48 models
<b>Extended Edge Switching maximum tiers</b> —maximum number of cascade levels (tiers) of bridge port extenders (BPEs).	ExtremeSwitching X465, X590, X670-G2, X690	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, X590, X670-G2, X690	8
<b>Extended Edge Switching VLAN+ port memberships</b> —maximum number of VLAN+ (extended) port memberships.	ExtremeSwitching X465, X590, X670-G2, X690	12,000 in hash mode (default) 131,000 in port-group mode
<b>Forwarding rate</b> —maximum L3 software forwarding rate.	ExtremeSwitching X690, X590, X465, X695	30,000 pps
	ExtremeSwitching X870	32,000 pps
	ExtremeSwitching X450-G2	16,000 pps
	ExtremeSwitching X460-G2	17,000 pps
	ExtremeSwitching X620	10,000 pps
	ExtremeSwitching X670-G2	15,000 pps
	ExtremeSwitching X440-G2	9,000 pps

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
FDB (unicast blackhole entries)— maximum number of unicast blackhole FDB entries.	ExtremeSwitching X460-G2	49,152 <sup>f</sup>
	ExtremeSwitching X670-G2	294,912 <sup>f</sup>
	ExtremeSwitching X450-G2	34,816 <sup>f</sup>
	ExtremeSwitching X620, X440-G2	16,384 <sup>f</sup>
	ExtremeSwitching X870	139,264 <sup>f</sup>
	ExtremeSwitching X690, X590, X465	278,528 <sup>f</sup>
	ExtremeSwitching X695	294,912 <sup>f</sup>
FDB (multicast blackhole entries)— maximum number of multicast blackhole FDB entries.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	1,024
	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	4,096
FDB (maximum L2 entries)— maximum number of MAC addresses.	ExtremeSwitching X460-G2	98,300 <sup>g</sup>
	ExtremeSwitching X670-G2	294,912 <sup>g</sup>
	ExtremeSwitching X450-G2	68,000 <sup>g</sup>
	ExtremeSwitching X620, X440-G2	16,384
	ExtremeSwitching X870	139,264 <sup>g</sup>
	ExtremeSwitching X690, X590, X465, X695	278,528 <sup>g</sup>
	ExtremeSwitching X695	294,912 <sup>g</sup>
FDB (maximum L2 entries)— maximum number of multicast FDB entries.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	4,096
	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2	1,024
Identity management—maximum number of Blacklist entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	512
Identity management—maximum number of Whitelist entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	512
Identity management—maximum number of roles that can be created.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	64
Identity management—maximum role hierarchy depth allowed.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	5
Identity management—maximum number of attribute value pairs in a role match criteria.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	16
Identity management—maximum number of child roles for a role.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8
Identity management—maximum number of policies/dynamic ACLs that can be configured per role.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>Identity management</b> —maximum number of LDAP servers that can be configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8
<b>Identity management</b> —maximum number of Kerberos servers that can be configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	20
<b>Identity management</b> —maximum database memory size.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	512
<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, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	500
<b>IGMP snooping per VLAN filters</b> —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	ExtremeSwitching X460-G2, X870	1,500
	ExtremeSwitching X450-G2	2,048
	ExtremeSwitching X670-G2, X695	2,000
	ExtremeSwitching X620, X440-G2	1,000
	ExtremeSwitching X690, X590, X465	4,000
<b>IGMPv1/v2 SSM-map entries</b> —maximum number of IGMPv1/v2 SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	50
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per port. <sup>n</sup>	ExtremeSwitching X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690, X590, X465, X695	4,000

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>IGMPv2 subscriber</b> —maximum number of IGMPv2 subscribers per switch. <sup>n</sup>	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X460-G2, X450-G2	20,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X465, X870, X690, X590, X695	45,000
<b>IGMPv3 maximum source per group</b> —maximum number of source addresses per group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X770, X620, X440-G2, X870, X690, X590, X465, X695	250
<b>IGMPv3 subscriber</b> —maximum number of IGMPv3 subscribers per port. <sup>n</sup>	ExtremeSwitching X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690, X590, 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 X670-G2	30,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X870, X690, X590, 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 X670-G2	131,072 (up to) <sup>h</sup>
	ExtremeSwitching X460-G2	57,344 (up to) <sup>h</sup>
	ExtremeSwitching X450-G2	47,000 (up to) <sup>h</sup>
	ExtremeSwitching X440-G2, X620	20,480
	ExtremeSwitching X870	94,206 (up to) <sup>h</sup>
	ExtremeSwitching X690, X590, X465	157,694 (up to) <sup>h</sup>
	ExtremeSwitching X695	184,318 (up to) <sup>h</sup>

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
IPv4 ARP entries in hardware with <b>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 X870	74,000 (up to) <sup>h</sup>
	ExtremeSwitching X460-G2	50,000 (up to) <sup>h</sup>
	ExtremeSwitching X670-G2	108,000 (up to) <sup>h</sup>
	ExtremeSwitching X450-G2	39,000 (up to) <sup>h</sup>
	ExtremeSwitching X620	1,500
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X690, X590, X465	119,000 (up to) <sup>h</sup>
	ExtremeSwitching X695	46,000 (up to) <sup>h</sup>
IPv4 ARP entries in hardware with <b>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 X870	64,000 (up to) <sup>h</sup>
	ExtremeSwitching X460-G2	43,000 (up to) <sup>h</sup>
	ExtremeSwitching X670-G2	98,000 (up to) <sup>h</sup>
	ExtremeSwitching X450-G2	29,000 (up to) <sup>h</sup>
	ExtremeSwitching X620	1,500
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X690, X590, X465	109,000 (up to) <sup>h</sup>
	ExtremeSwitching X695	125,000 (up to) <sup>h</sup>
IP flow information export (IPFIX)—number of simultaneous flows.	ExtremeSwitching X460-G2	2,048 ingress 2,048 egress
	ExtremeSwitching X450-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	N/A

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
IPv4 remote hosts in hardware with zero LPM routes—maximum recommended number of IPv4 remote hosts (hosts reachable through a gateway) in hardware when LPM routing is not used. Assumes number of IP route reserved entries is 0, and number of IPv4 ARP entries present is 100 or less.	ExtremeSwitching X870	120,000 (up to) <sup>h</sup>
	ExtremeSwitching X460-G2	73,000 <sup>h</sup>
	ExtremeSwitching X670-G2	176,000 (up to) <sup>h</sup>
	ExtremeSwitching X450-G2	61,000 (up to) <sup>h</sup>
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X690, X590, X465	216,000 (up to) <sup>h</sup>
	ExtremeSwitching X695	241,000 (up to) <sup>h</sup>
IPv4 routes—maximum number of IPv4 routes in software (combination of unicast and multicast routes), including static and from all routing protocols.	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	25,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	131,000
IPv4 routes (LPM entries in hardware)— number of IPv4 routes in hardware.	ExtremeSwitching X460-G2	12,000
	ExtremeSwitching X450-G2	16,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	131,000 <sup>q</sup>
	ExtremeSwitching X620, X440-G2	480
IPv6 6in4 tunnel—maximum number of IPv6 6in4 tunnels.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	255
	ExtremeSwitching X440-G2, X620	N/A
IPv6 6to4 tunnel—maximum number of IPv6 6to4 tunnels.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	1 (per virtual router)
	ExtremeSwitching X440-G2, X620	N/A
IPv6 addresses on an interface—maximum number of IPv6 addresses on an interface.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	255
IPv6 addresses on a switch—maximum number of IPv6 addresses on a switch.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	2,048
	ExtremeSwitching X620, X440-G2	510

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
IPv6 host entries in hardware—maximum number of IPv6 neighbor entries in hardware.	ExtremeSwitching X670-G2	36,750 <sup>h</sup>
	ExtremeSwitching X460-G2	22,000 <sup>h</sup>
	ExtremeSwitching X450-G2	12,000 <sup>h</sup>
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X620	1,500
	ExtremeSwitching X690, X590, X465	24,500 <sup>h</sup>
	ExtremeSwitching X870	22,000 <sup>h</sup>
	ExtremeSwitching X695	57,000 <sup>h</sup>
IPv6 routes in software—maximum number of IPv6 routes in software, including static routes and routes from all routing protocols.	ExtremeSwitching X450-G2, X460-G2, X620, X440-G2	25,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	65,000 <sup>q</sup>
IPv6 routes (LPM entries in hardware)—maximum number of IPv6 routes in hardware.	ExtremeSwitching X460-G2	6,000
	ExtremeSwitching X450-G2	8,000
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	65,000 <sup>q</sup>
	ExtremeSwitching X620, X440-G2	240
IPv6 routes with a mask greater than 64 bits in hardware—maximum number of such IPv6 LPM routes in hardware.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	8,192 <sup>r</sup>
	ExtremeSwitching X440-G2, X620	1,024
	ExtremeSwitching X450-G2, X460-G2	2,048
IPv6 route sharing in hardware—route mask lengths for which ECMP is supported in hardware.	ExtremeSwitching X460-G2, X450-G2, X620	0-64 >64 single path only
	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	0-128 <sup>r</sup>
	ExtremeSwitching X440-G2	Not supported
IP router interfaces—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	2,048
	ExtremeSwitching X620, X440-G2	510
IP multicast static routes—maximum number of permanent multicast IP routes.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	1,024
IP unicast static routes—maximum number of permanent IP unicast routes.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	1,024
	ExtremeSwitching X620, X440-G2	480



**Table 12: 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, X670-G2, X450-G2, X620, X870, X690, X590, X465, X695	2, 4, 8, 16, 32, or 64
	ExtremeSwitching X440-G2	N/A

**Table 12: 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 X670-G2	
	if maximum gateways is 2	1,022
	if maximum gateways is 4	1,022
	if maximum gateways is 8	1,022
	if maximum gateways is 16 (default)	1,022
	if maximum gateways is 32	510
	if maximum gateways is 64	254
	ExtremeSwitching X460-G2, X450-G2	
	if maximum gateways is 2	1,022
	if maximum gateways is 4	1,022
	if maximum gateways is 8	510
	if maximum gateways is 16 (default)	254
	if maximum gateways is 32	126
	if maximum gateways is 64	62
	ExtremeSwitching X620	
	if maximum gateways is 2	126
	if maximum gateways is 4	126
	if maximum gateways is 8	126
	if maximum gateways is 16 (default)	126
	if maximum gateways is 32	62
if maximum gateways is 64	30	
ExtremeSwitching X690, X590, X465, X695		
if maximum gateways is 2	4,094	
if maximum gateways is 4	4,094	
if maximum gateways is 8	2,046	
if maximum gateways is 16 (default)	1,022	
if maximum gateways is 32	510	
if maximum gateways is 64	254	
<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 the <a href="#">ExtremeXOS 30.7 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	

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
	if maximum gateways is 16 (default) if maximum gateways is 32 if maximum gateways is 64	1,022 510 254
	ExtremeSwitching X440-G2	N/A
<b>IP multinetting (secondary IP addresses)</b> —maximum number of secondary IP addresses per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	255
<b>Jumbo frames</b> —maximum size supported for jumbo frames, including the CRC.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	9,216
<b>L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch</b> —maximum number of VCCV enabled VPLS VPNs.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465	16
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A
<b>L2 VPN: VPLS MAC addresses</b> —maximum number of MAC addresses learned by a switch.	ExtremeSwitching X670-G2, X690, X590, X465	140,000
	ExtremeSwitching X460-G2	55,000
	ExtremeSwitching X870	65,000
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A
<b>L2 VPN: VPLS VPNs</b> —maximum number of VPLS virtual private networks per switch.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465	1,023
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A
<b>L2 VPN: VPLS peers</b> —maximum number of VPLS peers per VPLS instance.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465	64
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A
<b>L2 VPN: LDP pseudowires</b> —maximum number of pseudowires per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465	7,000
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A
<b>L2 VPN: static pseudowires</b> —maximum number of static pseudowires per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465	7,000
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A
<b>L2 VPN: Virtual Private Wire Service (VPWS) VPNs</b> —maximum number of virtual private networks per switch.	ExtremeSwitching X670-G2, X870, X690, X590, X465	4,090
	ExtremeSwitching X460-G2	1,023
	ExtremeSwitching X450-G2, X620, X440-G2, X695	N/A

**Table 12: 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 "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 X670-G2, X695	73,000
	ExtremeSwitching X460-G2	24,000
	ExtremeSwitching X450-G2	14,000
	ExtremeSwitching X620, X440-G2	5,000
	ExtremeSwitching X870	36,000
	ExtremeSwitching X690, X590, X465	67,000
<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>The internal lookup table configuration used is "more l3-and-ipmc".</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 X670-G2	77,500
	ExtremeSwitching X620, X440-G2	1,500
	ExtremeSwitching X870	52,000
	ExtremeSwitching X690, X590, 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>The internal lookup table configuration used is "more l3-and-ipmc".</li> <li>Assumes source-group-vlan mode as lookup key.</li> </ul>	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X460-G2	14,000
	ExtremeSwitching X450-G2	10,000
	ExtremeSwitching X620, X440-G2	700
	ExtremeSwitching X870	18,000
	ExtremeSwitching X690, X590, X465	48,000
	ExtremeSwitching X695	52,000

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<p><b>Load sharing</b>—maximum number of load sharing groups.</p> <p><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.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	128
<p><b>Load sharing</b>—maximum number of ports per load-sharing group.</p>	For standalone and stacked: ExtremeSwitching X620, X440-G2	8
	For standalone: ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	32
	For stacked: ExtremeSwitching X670-G2, X460-G2, X450-G2, X670-G2, X870, X690, X590, X465, X695	64
<p><b>Logged messages</b>—maximum number of messages logged locally on the system.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	20,000
<p><b>MAC-based security</b>—maximum number of MAC-based security policies.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	1,024
<p><b>MAC Locking</b>—Maximum number of MAC locking stations that can be learned on a port.</p>	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	64 (static MAC locking stations) 600 (first arrival MAC locking stations)
<p><b>Meters</b>—maximum number of meters supported.</p>	ExtremeSwitching X460-G2, X450-G2, X670-G2, X440-G2, X620, X870, X690, X590, X465, X695	2,048

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
Maximum mirroring instances.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, 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:  <ol style="list-style-type: none"> <li>1. 4 ingress</li> <li>2. 3 ingress + 1 egress</li> <li>3. 2 ingress + 2 egress</li> <li>4. 2 (ingress + egress)</li> <li>5. 1 (ingress + egress) + 2 ingress</li> <li>6. 1 (ingress + egress) + 1 egress + 1 ingress</li> </ol>	16 (including default mirroring instance)
	ExtremeSwitching X620, X440-G2  <b>Note:</b> For stacks containing X620 or 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, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	128
<b>Mirroring, one-to-many (monitor port)</b> —maximum number of one-to-many monitor ports.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	16

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
MLAG ports—maximum number of MLAG ports allowed.	ExtremeSwitching X670-G2, X690, X695	71
	ExtremeSwitching X440-G2, X450-G2	51
	ExtremeSwitching X460-G2	53
	ExtremeSwitching X620	15
	ExtremeSwitching X870	127
	ExtremeSwitching X590,	35
	ExtremeSwitching X465	55
MLAG peers—maximum number of MLAG peers allowed.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	2
MPLS RSVP-TE interfaces—maximum number of interfaces.	ExtremeSwitching X460-G2, X670-G2, X590, X465, X870	32
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS RSVP-TE ingress LSPs—maximum number of ingress LSPs.	ExtremeSwitching X460-G2, X670-G2, X870, X590, X690, X465	2,000
	ExtremeSwitching X450-G2, X440-G2, X620 X590, X465	N/A
MPLS RSVP-TE egress LSPs—maximum number of egress LSPs.	ExtremeSwitching X460-G2, X670-G2, X870, X690 X590, X465	2,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS RSVP-TE transit LSPs—maximum number of transit LSPs.	ExtremeSwitching X460-G2, X670-G2	2,000
	ExtremeSwitching X870, X690, X590, X465	4,000
	ExtremeSwitching X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE paths—maximum number of paths.	ExtremeSwitching X460-G2	1,000
	ExtremeSwitching X670-G2, X870, X690, X590, X465	2,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS RSVP-TE profiles—maximum number of profiles.	ExtremeSwitching X460-G2	1,000
	ExtremeSwitching X670-G2, X870, X690 X590, X465	2,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS RSVP-TE EROs—maximum number of EROs per path.	ExtremeSwitching X460-G2, X670-G2, X870, X690 X590, X465	64
	ExtremeSwitching X450-G2, and ExtremeSwitching X440-G2, X620	N/A

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
MPLS LDP peers—maximum number of MPLS LDP peers per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465	128
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS LDP adjacencies—maximum number of MPLS LDP adjacencies per switch.	ExtremeSwitching X460-G2	50
	ExtremeSwitching X670-G2, X870, X690 X590, X465	64
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS LDP ingress LSPs—maximum number of MPLS LSPs that can originate from a switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465	2,048
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS LDP-enabled interfaces—maximum number of MPLS LDP configured interfaces per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465	128
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS LDP transit LSPs—maximum number of MPLS transit LSPs per switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465	4,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS LDP egress LSPs—maximum number of MPLS egress LSPs that can terminate on a switch.	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465	4,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS static egress LSPs—maximum number of static egress LSPs.	ExtremeSwitching X460-G2	7,116
	ExtremeSwitching X870, X690, X590, X465, X670-G2	8,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS static ingress LSPs—maximum number of static ingress LSPs.	ExtremeSwitching X460-G2, X870, X690 X590, X465	4,000
	ExtremeSwitching X670-G2	2,048
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
MPLS static transit LSPs—maximum number of static transit LSPs	ExtremeSwitching X670-G2, X460-G2, X870, X690 X590, X465	4,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
Multicast listener discovery (MLD) snooping per-VLAN filters—maximum number of VLANs supported in per-VLAN MLD snooping mode.	ExtremeSwitching X460-G2, X670-G2, X870	768
	ExtremeSwitching X450-G2	508
	ExtremeSwitching X620, X440-G2	256
	ExtremeSwitching X690, X590, X465, X695	1,500



**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>Multicast listener discovery (MLD)v1 subscribers</b> —maximum number of MLDv1 subscribers per port. <sup>n</sup>	ExtremeSwitching X670-G2, X450-G2, X460-G2	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690, X590, 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, X620, X440-G2	10,000
	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X870, X690, X590, X465, X695	45,000
<b>Multicast listener discovery (MLD)v2 subscribers</b> —maximum number of MLDv2 subscribers per port. <sup>n</sup>	ExtremeSwitching X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690, X590, X465, X695	4,000
<b>Multicast listener discovery (MLD)v2 subscribers</b> —maximum number of MLDv2 subscribers per switch. <sup>n</sup>	ExtremeSwitching X670-G2	30,000
	ExtremeSwitching X460-G2, X450-G2, X620, X440-G2	10,000
	ExtremeSwitching X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	200
<b>Multicast listener discovery (MLD) SSM-map entries</b> —maximum number of MLD SSM mapping entries.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	500
	ExtremeSwitching X440-G2, X620	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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	50
<b>Network Login</b> —maximum number of clients being authenticated on MAC-based VLAN enabled ports.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	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, X590, X465	1,024
	ExtremeSwitching X670-G2, X870, X690, X695	512
	ExtremeSwitching X620, X440-G2	256
<b>Network Login</b> —maximum number of dynamic VLANs.	ExtremeSwitching X460-G2, X450-G2, X670-G2, X870, X690, X590, X465, X695	2,000
	ExtremeSwitching X440-G2, X620	1,024

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>Network Login VLAN VSAs</b> —maximum number of VLANs a client can be authenticated on at any given time.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	10
<b>Network Service Identifiers (NSI)/ VLAN mappings</b> —maximum number of VLANs to NSI mappings.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	94
<b>Node Alias</b> —maximum number of entries per slot.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8,192
<b>ONEPolicy Roles/Profiles</b> —maximum number of policy roles/profiles.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	63
<b>ONEPolicy Rules per Role/Profile</b> —maximum number of rules per role/policy.	ExtremeSwitching X450-G2, X460-G2	IPv6 rules: 256 IPv4 rules: 256 L2 Rules: 184 MAC Rules: 256
	ExtremeSwitching X670-G2, X870	IPv6 Rules: 256 L2 Rules: 184 MAC Rules: 256 IPv4 Rules: 256
	ExtremeSwitching X620, X440-G2	IPv6 and Mac Rules: 0 Ipv4 Rules: 256 (per switch) L2 Rules: 184 (per switch)
	ExtremeSwitching X465, X690, X590, X695	IPv4 Rules: 512 IPv6 Rules: 512 MAC Rules: 512 L2 Rules: 440
<b>ONEPolicy Authenticated Users per Switch</b> —maximum number of authenticated users per switch only with TCI-Overwrite enabled.	ExtremeSwitching X450-G2, X460-G2, X590, X465	1,024
	ExtremeSwitching X670-G2, X690, X870, X695	512
	ExtremeSwitching X620, X440-G2	256
	Stacking	Depends on the stack nodes, but the maximum is 65,535.

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<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 X690, X590, X465	24,576
	ExtremeSwitching X670-G2, X460-G2, X870, X695	12,288
	ExtremeSwitching X450-G2	6,144
	ExtremeSwitching X620, X440-G2	1,536
	Stacking	1,536–65,534
<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, X670-G2, X870, X695	12,288
	ExtremeSwitching X690, X590, X465	24,576
	ExtremeSwitching X440-G2, X620	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, X590, X465	1,024
	ExtremeSwitching X670-G2, X870, X690, X695	512
	ExtremeSwitching X620, 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, X670-G2, X870	952
	ExtremeSwitching X620, X440-G2	440
	ExtremeSwitching X690, X590, 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, X670-G2, X870	256
	ExtremeSwitching X620, X440-G2	N/A
	ExtremeSwitching X690, X590, 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, X670-G2, X870	256
	ExtremeSwitching X620, X440-G2	N/A
	ExtremeSwitching X690, X590, 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, X670-G2, X620, X440-G2, X870	256
	ExtremeSwitching X690, X590, X465, X695	512

**Table 12: 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, X670-G2, X870	184
	ExtremeSwitching X620, X440-G2	184
	ExtremeSwitching X690, X590, X465, X695	440
<b>Policy-based routing (PBR) redundancy</b> —maximum number of flow-redirects.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, 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 X670-G2	63
	ExtremeSwitching X460-G2	53
	ExtremeSwitching X450-G2	51
	ExtremeSwitching X440-G2	47
	ExtremeSwitching X620	15
	ExtremeSwitching X870	127
	ExtremeSwitching X690, X695	71
	ExtremeSwitching X590, X465	31
<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 X670-G2, X460-G2, X870, X690, X590, X465, X695	1,024
	ExtremeSwitching X450-G2	510
	ExtremeSwitching X440-G2	255
	ExtremeSwitching X620	510
<b>Private VLANs</b> —maximum number of private VLANs in an L2-only environment.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	1,280
	ExtremeSwitching X450-G2	597
	ExtremeSwitching X440-G2, X620	255
<b>PTP/1588v2 Clock Ports</b>	ExtremeSwitching X460-G2, X670-G2	32 for boundary clock 1 for ordinary clock
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695	N/A

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
PTP/1588v2 Clock Instances	ExtremeSwitching X670-G2, X460-G2	2 combinations: <ul style="list-style-type: none"> <li>• Transparent clock + ordinary clock</li> <li>• Transparent clock + boundary clock</li> </ul>
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695	N/A
PTP/1588v2 Unicast Static Slaves	ExtremeSwitching X670-G2, X460-G2	40 entries per clock port
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695	N/A
PTP/1588v2 Unicast Static Masters	ExtremeSwitching X670-G2, X460-G2	10 entries per clock type
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590, X695	N/A
<b>Route policies</b> —suggested maximum number of lines in a route policy file.	ExtremeSwitching X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	10,000
<b>RIP Learned Routes</b> —maximum number of RIP routes supported without aggregation.	ExtremeSwitching X670-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695	10,000
<b>RIP interfaces on a single router</b> —recommended maximum number of RIP routed interfaces on a switch.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	256
	ExtremeSwitching X440-G2, X620	128
<b>RIPng learned routes</b> —maximum number of RIPng routes.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	3,000
	ExtremeSwitching X440-G2, X620	N/A
<b>Spanning Tree (maximum STPDs)</b> —maximum number of Spanning Tree Domains on port mode EMISTP.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X620, X870, X690, X590, X465, X695	64
	ExtremeSwitching X440-G2	32

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<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, ExtremeSwitching X670-G2 supports 256 PVST domains (maximum), and 4,096 STP ports (maximum), so the maximum number of active ports per PVST domain would be 16 ports (4,096 ÷ 256).	ExtremeSwitching X670-G2, X620	256
	ExtremeSwitching X460-G2, X450-G2, X440-G2	128
	ExtremeSwitching X870, X690, X590 , X465, X695	384
<b>Spanning Tree</b> —maximum number of multiple spanning tree instances (MSTI) domains.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590 , 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 X670-G2	500
	ExtremeSwitching X460-G2, X450-G2, X620, X870, X690, X590 , X465, X695	600
	ExtremeSwitching X440-G2	256
<b>Spanning Tree</b> —maximum number of VLANs on all MSTP instances.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X620, X870, X690, X590 , 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, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695	1
<b>Spanning Tree (number of ports)</b> —maximum number of ports including all Spanning Tree domains.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590, 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 X670-G2, X460-G2, X450-G2, X620, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	1,024

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>Syslog servers</b> —maximum number of simultaneous Syslog servers that are supported.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	16
<b>Syslog targets</b> —maximum number of configurable Syslog targets.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	16
<b>Telnet (number of sessions)</b> —maximum number of simultaneous Telnet sessions.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8
<b>Virtual routers</b> —maximum number of user-created virtual routers that can be created on a switch.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695 ExtremeSwitching X440-G2, X620	63 16 (local-only VRs)
<b>Virtual router forwarding (VRFs)</b> —maximum number of VRFs that can be created on a switch.  <b>Note:</b> * Subject to other system limitations.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695 ExtremeSwitching X440-G2, X620	960 * 16 (local-only VRFs)
<b>Virtual router protocols per VR</b> —maximum number of routing protocols per VR.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695 ExtremeSwitching X440-G2, X620	8 N/A
<b>Virtual router protocols per switch</b> —maximum number of VR protocols per switch.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695 ExtremeSwitching X440-G2, X620	64 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	1,000
<b>VLANs</b> —includes all VLANs.  <b>Note:</b> ExtremeXOS supports only 4,092 user-configurable VLANs. (VLAN 1 is the default VLAN, and 4,095 is the management VLAN, and you may not configure them.)	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	4,094
<b>VLANs (Layer 2)</b> —maximum number of Layer 2 VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X450-G2, X870, X690, X590, X465, X695 ExtremeSwitching X440-G2, X620	2,048 510

**Table 12: Supported Limits for Edge License (continued)**

Metric	Product	Limit
<b>VLAN Port Interfaces (VPIF)</b> —maximum number of VLAN port interfaces.	ExtremeSwitching X440-G2, X450-G2, X460-G2, X465, , X590, X670-G2, X620, X690, X870, X695	131,585
<b>VLANs (maximum active port-based)</b> —maximum active ports per VLAN when 4,094 VLANs are configured with the default license.	ExtremeSwitching X670-G2, X870, X690, X590 , X465, X695	32
	ExtremeSwitching X440-G2	28
	ExtremeSwitching X460-G2	26
	ExtremeSwitching X620	16
	ExtremeSwitching X450-G2	29
	ExtremeSwitching X460-G2	24
<b>VLANs (maximum active protocol-sensitive filters)</b> —number of simultaneously active protocol filters in the switch.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2. X870, X690, X590 , X465, X695	16
<b>VLAN translation</b> —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN.	ExtremeSwitching X670-G2	63
	ExtremeSwitching X460-G2	53
	ExtremeSwitching X450-G2	51
	ExtremeSwitching X620	15
	ExtremeSwitching X440-G2	47
	ExtremeSwitching X870	127
	ExtremeSwitching X690, X695	71
	ExtremeSwitching X590, X465	31
<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 X670-G2, X465, X870, X690, X590, X695	1,024
	ExtremeSwitching X450-G2	512
	ExtremeSwitching X620	510
	ExtremeSwitching X440-G2	255
<b>VLAN translation</b> —maximum number of translation VLAN pairs in an L2-only environment.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695	2,046
	ExtremeSwitching X440-G2, X620	255



**Table 12: 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, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, 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, X670-G2, X870, X690, X590, X465, X695 ExtremeSwitching X450-G2, X440-G2, X620	2,048 1,024
<b>XNV database entries</b> —maximum number of VM database entries (combination of local and network VMs).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	2,048
<b>XNV dynamic VLAN</b> —Maximum number of dynamic VLANs created (from VPPs /local VMs).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	2,048
<b>XNV local VPPs</b> —maximum number of XNV local VPPs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	2,048 ingress 512 egress

## Supported Limits for Advanced Edge License

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

**Table 13: Supported Limits for Advanced Edge License**

Metric	Product	Limit
<b>BGP auto-peering</b> —maximum number of auto-peering nodes and VTEPs.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	64
<b>BGP auto-peering attached IPv4 hosts</b> — maximum number of attached IPv4 hosts.	ExtremeSwitching X670-G2 ExtremeSwitching X870, X690, X590, X465, X695	16,000 64,000

**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>BGP auto-peering attached IPv6 hosts</b> — maximum number of attached IPv6 hosts.	ExtremeSwitching X670-G2	254
	ExtremeSwitching X870, X690, X590, 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 X670-G2, ExtremeSwitching X690, X870, X590, X465, X695	16*
<b>BGP auto-peering maximum IPv4 prefixes with ECMP</b> —Maximum number of IPv4 Network prefixes with ECMP.	ExtremeSwitching X670-G2, ExtremeSwitching X690, X870, X590, X465, X695	64,000
<b>BGP auto-peering maximum IPv6 prefixes with ECMP</b> —Maximum number of IPv6 Network prefixes with ECMP.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	8,000
<b>BGP auto-peering MLAG peers</b> — maximum MLAG peers per AutoBGP node.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	1
<b>BGP auto-peering VRFs</b> — maximum number of VRFs.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	64
<b>BGP auto-peering EVPN instances</b> —maximum EVPN instances.	ExtremeSwitching X670-G2, X690, X870, X590, X465, X695	1,024
<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 X870, X690, X590, X465, X695	128
	ExtremeSwitching X670-G2, X450-G2, X460-G2	64
	ExtremeSwitching X440-G2, X620	32
<b>EAPsv2 protected VLANs</b> — maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X440-G2, X620	500
	ExtremeSwitching X870, X690, X590, X465, X695	2,000
<b>ERPS domains</b> —maximum number of ERPS domains without CFM configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	32
<b>ERPS domains</b> —maximum number of ERPS domains with CFM configured.	ExtremeSwitching X450-G2, X670-G2, X620, X870, X690, X590, X465, X695	16
	ExtremeSwitching X460-G2	32

**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
ERPSv1 protected VLANs—maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	2,000
	ExtremeSwitching X620, X440-G2	1,000
ERPSv2 protected VLANs—maximum number of protected VLANs.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	2,000
	ExtremeSwitching X620, X440-G2	500
ESRP groups—maximum number of ESRP groups	ExtremeSwitching X450-G2, X460-G2, X670-G2, X440-G2, X620, X870, X690, X590, X465, X695	32
ESRP domains—maximum number of ESRP domains.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	64
ESRP L2 VLANs—maximum number of ESRP VLANs without an IP address configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	1,000
ESRP L3 VLANs—maximum number of ESRP VLANs with an IP address configured.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	511
ESRP (maximum ping tracks)—maximum number of ping tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8
ESRP (IP route tracks)—maximum IP route tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8
ESRP (VLAN tracks)—maximum number of VLAN tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	1
OSPFv2/v3 ECMP—maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	64
	ExtremeSwitching X620	4
	ExtremeSwitching X440-G2	N/A
OSPFv2 areas—as an ABR, how many OSPF areas are supported within the same switch.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	8
	ExtremeSwitching X450-G2, X440-G2, X620	4
OSPFv2 external routes—recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X670-G2, X460-G2	5,000
	ExtremeSwitching X450-G2, X440-G2, X620	2,400
OSPFv2 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2	2,000
	ExtremeSwitching X450-G2, X440-G2, X620	1,000

**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>OSPFv2 interfaces</b> —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	4
<b>OSPFv2 links</b> —maximum number of links in the router LSA.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	400
	ExtremeSwitching X450-G2, X620, X440-G2	4
<b>OSPFv2 neighbors</b> —maximum number of supported OSPF adjacencies.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695	4
<b>OSPFv2 routers in a single area</b> —recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X670-G2, X460-G2	50
	ExtremeSwitching X450-G2, X440-G2, X620	4
<b>OSPFv2 virtual links</b> —maximum number of supported OSPF virtual links.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	32
	ExtremeSwitching X450-G2, X440-G2, X620	4
<b>OSPFv3 areas</b> —as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X460-G2, X670-G2	16
	ExtremeSwitching X450-G2, X440-G2, X620	4
<b>OSPFv3 external routes</b> —recommended maximum number of external routes.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X450-G2, X440-G2, X620	1,200
<b>OSPFv3 inter- or intra-area routes</b> —recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2	3,000
	ExtremeSwitching X450-G2, X440-G2, X620	500
<b>OSPFv3 interfaces</b> —maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X440-G2, X620, X590, X465, X695	4
<b>OSPFv3 neighbors</b> —maximum number of OSPFv3 neighbors.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X440-G2, X620, X590, X465, X695	4
<b>OSPFv3 virtual links</b> —maximum number of OSPFv3 virtual links supported.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	16
	ExtremeSwitching X450-G2, X440-G2, X620	4
<b>PIM IPv4 (maximum interfaces)</b> —maximum number of PIM active interfaces.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X440-G2, X620, X690, X590, X465, X695	4

**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	180
<b>PIM IPv4 Limits</b> —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	3,000 (depends on policy file limits)
<b>PIM IPv4 Limits</b> —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	5,000
	ExtremeSwitching X440-G2, X620	1,500
<b>PIM IPv4 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	145
<b>PIM IPv4 Limits</b> —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	32
<b>PIM IPv6 (maximum interfaces)</b> —maximum number of PIM active interfaces.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X440-G2, X620, X690, X590, X465, X695	4
<b>PIM IPv6 Limits</b> —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	1,750
	ExtremeSwitching X450-G2	1,500
	ExtremeSwitching X440-G2, X620	550
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	70
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	64
<b>PIM IPv6 Limits</b> —maximum number of secondary addresses per interface.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	70
<b>PIM IPv6 Limits</b> —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	32
<b>Port-specific VLAN tags</b> —maximum number of port-specific VLAN tags.	ExtremeSwitching X460-G2, X670-G2, X770, X870, X690, X590, X465, X695	1,023
	ExtremeSwitching X450-G2, X440-G2, X620	N/A

**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
Port-specific VLAN tags—maximum number of port-specific VLAN tag ports.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X450-G2, X440-G2, X620	N/A
VRRP (v2/v3-IPv4) (maximum instances)—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 X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	511
	ExtremeSwitching X440-G2, X620	128
	<b>Scaled Mode (with groups):</b> ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	2,048
	ExtremeSwitching X440-G2, X620	128
VRRP (v3-IPv6) (maximum instances)—maximum number of VRRP instances for a single switch, with Advanced Edge 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 X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	511
	ExtremeSwitching X440-G2, X620	128
	<b>Scaled Mode (with groups):</b> ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695	2,048
	ExtremeSwitching X440-G2, X620	128
VRRP (v2/v3-IPv4/IPv6) (maximum VRID)—maximum number of unique VRID numbers per switch.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 <b>Note:</b> With Advanced Edge license or higher.	255
VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN)—maximum number of VRIDs per VLAN.	ExtremeSwitching X670-G2, X460-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 <b>Note:</b> With Advanced Edge license or higher.	255
VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks)—maximum number of ping tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 <b>Note:</b> With Advanced Edge license or higher.	8

**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
<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, X670-G2, X620, X440-G2, X870, X690, X590, 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, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8 (20 centisecond or 1 second hello interval)
<b>VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks)</b> —maximum number of IP route tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695	8
<b>VRRP (v2/v3-IPv4/IPv6)</b> —maximum number of VLAN tracks per VLAN.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, 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 X670-G2, X870, X690, X590, X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	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 X670-G2, X870, X690, X590, X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	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 X670-G2, X870, X690, X590, X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	64,000  N/A
<b>VXLAN</b> —maximum RTEP IP addresses	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695  ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	512  N/A



**Table 13: Supported Limits for Advanced Edge License (continued)**

Metric	Product	Limit
VXLAN—maximum virtual networks with dynamic learning and OSPF extensions for VXLAN	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X460-G2, X450-G2, X440-G2, X620	N/A

## Supported Limits for Core License

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

**Table 14: Supported Limits for Core License**

Metric	Product	Limit
BGP (aggregates)—maximum number of BGP aggregates.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	256
	ExtremeSwitching X450-G2	204
BGP (networks)—maximum number of BGP networks.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	1,024
	ExtremeSwitching X450-G2	820
BGP (peers)—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, X670-G2, X870	128
	ExtremeSwitching , X590, X465, X695	300
	ExtremeSwitching X450-G2	100
	ExtremeSwitching X690	500
BGP (peer groups)—maximum number of BGP peer groups.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	64
	ExtremeSwitching X450-G2	50
BGP (policy entries)—maximum number of BGP policy entries per route policy.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	256
	ExtremeSwitching X450-G2	204
BGP (policy statements)—maximum number of BGP policy statements per route policy.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	1,024
	ExtremeSwitching X450-G2	820
BGP multicast address-family routes—maximum number of multicast address-family routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	25,000
	ExtremeSwitching X450-G2	20,000



**Table 14: 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, X670-G2, X870, X690, X590, X465, X695 (at default)	25,000
	ExtremeSwitching X870, X690, X590, 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, X670-G2, X870, X690, X590, 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, X670-G2, X870, X690, X590, 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 X670-G2	8,000
	ExtremeSwitching X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X870, X690 (with ALPM enabled)	100,000
	ExtremeSwitching X450-G2	4,800
<b>BGPv6 (non-unique routes)</b> —maximum number of non-unique BGP routes.	ExtremeSwitching X460-G2	18,000
	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	24,000
	ExtremeSwitching X450-G2	14,000
<b>EVPN EVI instances</b> —maximum number of EVI instances.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	1,024
<b>EVPN LAGs</b> —maximum number of LAGs.	ExtremeSwitching X670-G2, X870, X690, X590, X465, X695	128
<b>GRE Tunnels</b> —maximum number of GRE tunnels.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695	255
	ExtremeSwitching X620, X440G2	N/A
<b>IS-IS adjacencies</b> —maximum number of supported IS-IS adjacencies.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, 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, X670-G2, X870, X690, X590, 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, X670-G2, X770, X870, X690, X590, X465, X695	255
	ExtremeSwitching X450-G2	N/A

**Table 14: Supported Limits for Core License (continued)**

Metric	Product	Limit
IS-IS routers in an area— recommended maximum number of IS-IS routers in an area.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	256
	ExtremeSwitching X450-G2	N/A
IS-IS route origination— recommended maximum number of routes that can be originated by an IS-IS node.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4 L1 routes in an L1 router— recommended maximum number of IS-IS Level 1 routes in a Level 1 IS- IS router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	25,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4 L2 routes— recommended maximum number of IS-IS Level 2 routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	25,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4 L1 routes in an L1/L2 router—recommended maximum number of IS-IS Level 1 routes in an L1/L2 IS-IS router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv6 L1 routes in an L1 router— recommended maximum number of IS-IS Level 1 routes in a Level 1 IS- IS router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv6 L2 routes— recommended maximum number of IS-IS Level 2 routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv6 L1 routes in an L1/L2 router—recommended maximum number of IS-IS Level 1 routes in a L1/L2 router.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4/IPv6 L1 routes in an L1 router—recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A
IS-IS IPv4/IPv6 L2 routes in an L2 router—recommended maximum number of IS-IS Level 2 routes in a Level 2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A

**Table 14: 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, X670-G2, X870, X690, X590, X465, X695	20,000
	ExtremeSwitching X450-G2	N/A
<b>MSDP active peers</b> —maximum number of active MSDP peers.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695	64
<b>MSDP SA cache entries</b> —maximum number of entries in SA cache.	ExtremeSwitching X670-G2, X690, X590, X465, X695	14,000
	ExtremeSwitching X460-G2	10,000
	ExtremeSwitching X870	11,000
	ExtremeSwitching X450-G2	8,000
<b>MSDP maximum mesh groups</b> —maximum number of MSDP mesh groups.	ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695	16
<b>OSPFv2/v3 ECMP</b> —maximum number of equal cost multipath OSPFv2 and OSPFv3.	ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, 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, X670-G2, X870, X690, X590, X465, X695	8
<b>OSPFv2 external routes</b> —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X670-G2, 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 X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2	2,000
	ExtremeSwitching X450-G2	1,600
<b>OSPFv2 interfaces</b> —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	400
	ExtremeSwitching X450-G2	320
<b>OSPFv2 links</b> —maximum number of links in the router LSA.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	400
	ExtremeSwitching X450-G2	320
<b>OSPFv2 neighbors</b> —maximum number of supported OSPF adjacencies.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	128
	ExtremeSwitching X450-G2	96

**Table 14: Supported Limits for Core License (continued)**

Metric	Product	Limit
OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X670-G2, X460-G2	50
	ExtremeSwitching X450-G2	40
OSPFv2 virtual links—maximum number of supported OSPF virtual links.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695	32
	ExtremeSwitching X450-G2	25
OSPFv3 areas—as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690, X590, X465, X695	100
	ExtremeSwitching X460-G2, X670-G2	16
	ExtremeSwitching X450-G2	12
OSPFv3 external routes—recommended maximum number of external routes.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	10,000
	ExtremeSwitching X450-G2	7,500
OSPFv3 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690, X590, X465, X695	4,000
	ExtremeSwitching X670-G2, X460-G2	3,000
	ExtremeSwitching X450-G2	500
OSPFv3 interfaces—maximum number of OSPFv3 interfaces (active interfaces only).	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	256
	ExtremeSwitching X450-G2	192
OSPFv3 neighbors—maximum number of OSPFv3 neighbors.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	64
	ExtremeSwitching X450-G2	48
OSPFv3 virtual links—maximum number of OSPFv3 virtual links supported.	ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695	16
	ExtremeSwitching X450-G2	12
PIM IPv4 (maximum interfaces)—maximum number of PIM active interfaces.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	255
PIM IPv4 Limits—maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	180
PIM IPv4 Limits—maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	3,000 (depends on policy file limits)
PIM IPv4 Limits—maximum number of multicast sources per group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695	5,000

**Table 14: Supported Limits for Core License (continued)**

Metric	Product	Limit
<b>PIM IPv4 Limits</b> —maximum number of dynamic rendezvous points per multicast group.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590 , X465, X695	145
<b>PIM IPv4 Limits</b> —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590 , X465, X695	32
<b>PIM IPv6 (maximum interfaces)</b> —maximum number of PIM active interfaces.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590 , X465, X695	255
<b>PIM IPv6 Limits</b> —maximum number of multicast sources per group.	ExtremeSwitching X460-G2, X670-G2, X870, X690, X590 , X465, X695 ExtremeSwitching X450-G2,	1,750 1,500
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per dynamic rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590 , X465, X695	70
<b>PIM IPv6 Limits</b> —maximum number of multicast groups per static rendezvous point.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, 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, X670-G2, X870, X690, X590 , X465, X695	64
<b>PIM IPv6 Limits</b> —maximum number of secondary addresses per interface.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590 , X465, X695	70
<b>PIM IPv6 Limits</b> —static rendezvous points.	ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590 , X465, X695	32

<sup>a</sup> The table shows the total available. When installing ACL rules bound to a set of ports, rules are replicated for each port if there are ACL counters and counter compression is not enabled, or if the ports are Extended Edge Switching extended ports.

<sup>c</sup> When there are BFD sessions with minimal timer, sessions with default timer should not be used.

<sup>f</sup> Effective capacity varies based on actual MAC addresses and VLAN IDs used and hash algorithm selected.

<sup>g</sup> Based on "configure forwarding internal-tables more I2".

<sup>h</sup> Based on "configure forwarding internal-tables more I3-and-ipmc".

<sup>j</sup> The limit depends on setting configured with configure iproute reserved-entries.

<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.



# Open Issues, Known Behaviors, and Resolved Issues

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

## Open Issues

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The following are new open issues for supported features found in ExtremeXOS 30.7.

**Table 15: Open Issues, Platform-Specific, and Feature Change Requests (CRs)**

Defect Number	Description
ExtremeSwitching X620 Series Switches	
EXOS-26182	With 1G optic in fiber combo port, copper link does not become active when fiber link is removed. Issue does not occur when using 10G optics.
ExtremeSwitching X690 Series Switches	
EXOS-26640	ExtremeXOS 30.7 disables auto active/standby by default when creating BGP auto-peering. To enable auto active/standby, use the following command after BGP auto-peering is created: <code>delete mlag peer SYS_EASYLAG_OFF</code> .
EXOS-26614	On ExtremeSwitching X695 series switches with more than 1,021 router interfaces and VRRP, IP traffic to the VRRP MAC might be dropped. <b>Workaround:</b> The first time VRRP is enabled on a VLAN, the number of router interfaces must be below 1,022 or above 1,022—not equal. You can view the current number of router interfaces using the command <code>debug hal show ipv4Intf   include "L3 Interfaces"</code> .
ExtremeSwitching X670-G2 Series Switches	
EXOS-26651	PTPv2 is not available for ExtremeSwitching X670-G2 series switches.
EVPN	
EXOS-26412	Rebooting an MLAG peer in an EVPN environment causes an excessive length of time for convergence to occur.

**Table 15: Open Issues, Platform-Specific, and Feature Change Requests (CRs) (continued)**

Defect Number	Description
EXOS-26729	<p>With LACP in BGP/EVPN VXLAN configurations, missing FDB MACs/ARPs occur from a remote VTEP with the following log message on the remote VTEP:</p> <pre>&lt;Warn:BGP.UpdateMgr.RtNotAdvertLargeUpdtMsg&gt; A route cannot be advertised because it is too large to fit into the maximum allowed size of a BGP UPDATE message. VR = &lt;vr number&gt; Destination address AFI/SAFI = 4587545 Destination address prefix =&lt;7 32 bit Hex strings forming the BGP route prefix&gt; Destination address prefix length = 216</pre> <p><b>Workaround:</b> Do not configure a LAG port on more than:</p> <ul style="list-style-type: none"> <li>• With EVPN and BGP Auto-peering enabled: 75 VLANs</li> <li>• With EVPN and static BGP configuration: 120 VLANs</li> </ul> <p>Alternatively, you can avoid these limits using a static port share that does not specify the LACP protocol.</p> <p><b>Note:</b> The LACP protocol is used if explicitly configured in the sharing commands. The preceding limitations also apply to any MLAGs using an LACP-enabled port share.</p>
FDB	
EXOS-26648	<p>When you configure an explicit time using the <code>configure time</code> command, it might cause the switch to experience traffic loss or perform software forwarding instead of hardware forwarding.</p> <p><b>Workaround:</b> Save, and then reboot, the switch.</p>
VXLAN	
EXOS-20311	When changing RTEP tenant VLAN IP address, error messages occur.

## Known Behaviors

There are no known limitations in the ExtremeXOS system architecture that have yet to be resolved for ExtremeXOS 30.7.

## Resolved Issues in ExtremeXOS 30.7.1-Patch1-23

The following issues were resolved in ExtremeXOS 30.7.1-Patch1-23. ExtremeXOS 30.7.1-Patch1-23 includes all fixes up to and including ExtremeXOS 11.6.5.3, and earlier, ExtremeXOS 12.0.5, ExtremeXOS 12.1.7, ExtremeXOS 12.2.2-patch1-12, ExtremeXOS 12.3.6, ExtremeXOS 12.4.5, ExtremeXOS 12.5.5, ExtremeXOS 12.6.3, ExtremeXOS 12.6.5, ExtremeXOS 12.7.1, ExtremeXOS 15.1.5, ExtremeXOS 15.2.4, ExtremeXOS 15.3.3, ExtremeXOS 15.4.1, ExtremeXOS 15.5.1, ExtremeXOS 15.5.2, ExtremeXOS 15.6.1, ExtremeXOS 15.6.2, ExtremeXOS 15.7.1, ExtremeXOS 16.1, ExtremeXOS 16.1.2, ExtremeXOS 16.1.3, ExtremeXOS 21.1, ExtremeXOS 22.1, ExtremeXOS 22.2, ExtremeXOS 22.3, ExtremeXOS 22.4, ExtremeXOS 22.5, ExtremeXOS 22.6, ExtremeXOS 30.1, ExtremeXOS 30.2, ExtremeXOS 30.3,



ExtremeXOS 30.4, ExtremeXOS 30.5, ExtremeXOS 30.6, and ExtremeXOS 30.7. For information about those fixes, see the release notes for the specific release.

**Table 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-23**

Defect Number	Description
<b>General</b>	
EXOS-26944	IQ Agent ends unexpectedly when SNMP is blocked.
EXOS-26445	Need support for image integrity check in ExtremeXOS.
EXOS-27029	IQ Agent version 0.3.11 is not providing the patch information in the "osVersion" object in the association request to ExtremeCloud IQ.
EXOS-26908	DNS packets are not processed on the NetLogin VLAN when an IP address is re-configured, and when a NetLogin web-enabled port is not a member of the NetLogin VLAN.
EXOS-26816	AnSCP2 client session using the cipher option to transfer files from the switch to an SCP server produces the following error: <code>Error:can't read "args(&lt;cipher&gt;)": no such element in array.</code>
EXOS-26901	When you configure an explicit time using the <code>configure time</code> command, the switch might experience traffic loss or perform software forwarding instead of hardware forwarding.
EXOS-26953	VPEX process ends unexpectedly when processing checkpoint messages from an MLAG peer with a non-existent slot number.
EXOS-26898	SSH logon fails after repeated SSH logon/logoff attempts.
EXOS-26729	On LACP in BGP/EVPN VXLAN configurations, missing FDB MACs and ARPs occur from a remote VTEP with the following log message on the remote VTEP: <pre>&lt;Warn:BGP.UpdateMgr.RtNotAdvertLargeUpdtMsg&gt; A route can not be advertised because it is too large to fit into the maximum allowed size of a BGP UPDATE message. VR = &lt;vr number&gt; Destination address AFI/ SAFI = 4587545 Destination address prefix =&lt;7 32 bit Hex strings forming the BGP route prefix&gt; Destination address prefix length = 216</pre>
EXOS-26128	ExtremeXOS ignores LLDP PDUs from auth-override (AP-aware) ports.
EXOS-26795	After deleting virtual-link-local configurations, VRRP process ends unexpectedly.
EXOS-26818	Infrequently, after enabling SSH, the process <code>exsshd</code> ends unexpectedly due to EPM timeout.
EXOS-26603	Traffic between hosts using LAG is not hashed on the same port with XOR hash algorithm if the number of sharing ports is not power of 2.
EXOS-26697	Even after enabling a disabled port, ELRP disabled logs are not cleared.
EXOS-10852	When the wrong ARP packets are received on tenant VLANs, the following VXLAN error messages occur: <pre>04/12/2020 18:24:54.76 &lt;Erro:HAL.VNet.Error&gt; Failed to Add Net Port for RTEP:1 RtepAddr:192.168.253.2 LtepAddr:192.168.253.1 portType:2 err Generic Error 04/12/2020 18:24:54.76 &lt;Erro:HAL.VXLAN.Error&gt; Cannot create BUM port in standard mode.</pre>



**Table 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-23 (continued)**

Defect Number	Description
EXOS-26825	After upgrading to ExtremeXOS 30.1, Identity manager Kerberos snooping stops working.
EXOS-26814	Number of SSH key files in <code>/usr/local/cfg</code> and <code>show config exsshd</code> are not equal.
EXOS-26815	Infrequently, when enabling SSH, the process <code>exsshd</code> ends unexpectedly due to EPM timeout.
EXOS-26817	If a configuration file saved in an older ExtremeXOS release is used, even after generating fresh key, SSH port 22 is not open.
EXOS-26952	On Extended Edge Switching MLAG topologies, the layer 2 traffic that is hashed to the specific port of VPLAG is dropped.
<b>SummitStack</b>	
EXOS-26824	When hosts move from a network VLAN to a subscriber VLAN, HAL process ends unexpectedly.
EXOS-20565	When nodes are automatically added or replaced on a stack, the command <code>show inline-power slot master_slot</code> fails.
<b>ExtremeSwitching X440-G2 Series Switches</b>	
EXOS-24091	On a few ExtremeSwitching X440-G2 series switches, upgrading from any ExtremeXOS 22.x version to ExtremeXOS 30.3, or later, fails due to partition error.
<b>ExtremeSwitching X460-G2 Series Switches</b>	
EXOS-10884	If a bulk number of FDB entries age out at same time, excessive MAC move notifications appear from hardware.

## Resolved Issues in ExtremeXOS 30.7

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

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7**

Defect Number	Description
<b>General</b>	
EXOS-20534	Extreme Management Center does not pass DNS search suffixes to ExtremeXOS switches.

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

Defect Number	Description
EXOS-20493	Configuring Simple Loop Protection Protocol (SLPP) guard recovery timeout value as zero using :Extreme Management Center does not set a zero value for timeout on a switch, but rather is ignored and leaves the default value of 60 seconds in place.
EXOS-20230	Combining MLAG and VLAN translation, reachability issues occur.
EXOS-20132	IPv4 adjacency shows resolved when there is network loop and IP forwarding is disabled.
EXOS-20120	Node Alias configuration is not removed after running the command <code>unconfigure slot slot no.</code>
EXOS-19972	Image installation takes a little longer for ExtremeXOS 30.6, and the following log message might appear as a result: <Warn:EPM.Upgrade.State> Upgrade status Installation time may be greater than expected due to a lack of memory resources.
EXOS-19682	Commands implemented internally using Python script cause memory leaks.
EXOS-19308	On SummitStack, when ports are in software learning mode, FDB is not programmed in hardware on all slots resulting in flooding.
EXOS-19163	With group table is full and when flapping the port, L3 IPMC index resource leak occurs.
EXOS-20608	After unconfiguring PVLAN loop-back, PVLAN port goes down if it contains SX SFP optics and its auto-negotiation is disabled.
EXOS-20520	If the Management VLAN is created using the Fabric Attach server and DHCP packets are relayed through the fabric to the DHCP server, auto provision (ZTP) does not finish.
EXOS-26329	ExtremeXOS should process only supported TLVs and ignore unsupported TLVs in AVB signaling/announce messages.
EXOS-26446	Switch receives IGMPv1 queries from ExtremeXOS IGMP querier configured as IGMPv2.
EXOS-26217	LLDP process crash occurs when IPv6 address is encoded in a TLV.
EXOS-24246	Deprecated ip-option related CLI commands should not appear under <code>show configuration rtmgr detail.</code>
EXOS-26429	If MVR is enabled globally on the user virtual-router (VR), but not on the VRF, the process "mcmgr" ends unexpectedly when receiving IGMP report packets.
EXOS-24095	When snmpwalk is done for entity_mib (1.3.6.1.2.1.47.1.1.1) and if a QSFP-to-SFP adapter is present in the switch, process devmgr ends unexpectedly.
EXOS-24093	MIB object "IfName" is not sent in Link up/Link down SNMP traps.
EXOS-24084	After an IGMP receiver flaps twice, multicast streams are not forwarded to receivers by PIM-SSM.
EXOS-20516	Convergence takes 6 seconds when port down/up coincides with optics polling interval (once in 300 sec).

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

Defect Number	Description
EXOS-20429	FDB entries learned on NetLogin-enabled bridge port extender (BPE) ports point to the CPU causing traffic loss.
EXOS-20251	BFD sessions on the Default VLAN go down after enabling hardware-assist BFD,
EXOS-24128	Need to allow RESTCONF GET requests for user-level accounts.
EXOS-24120	When refreshing policy files, process HAL ends unexpectedly with signal 11.
<b>ExtremeSwitching X695 Series Switches</b>	
EXOS-20029, EXOS-19978	Stacks with IPv6-to-IPv4 or IPv6-in-IPv4 tunnels may experience traffic loss or slowpath if a VLAN with a tunnel has its VLAN tag changed dynamically using the command <code>configure vlan vlan_name tag new_tag</code> .
EXOS-19637	On ExtremeSwitching X695 series switches, with ECMP enabled for the VXLAN overlay network, deleting static overlay routes produces a shadow problem error and traffic is stopped.
EXOS-19532	On ExtremeSwitching X695 series switches, VMAN over VXLAN is not supported.
EXOS-19367	On ExtremeSwitching X695 series switches, the command "show process group" displays CPU utilization of the "Other" group tasks also under the "EXOS" group.
EXOS-19359	On ExtremeSwitching X695 series switches, "Other" group CPU utilization does not appear accurately in the <code>show process group</code> command.
<b>ExtremeSwitching X440-G2 Series Switches</b>	
EXOS-19349, EXOS-24065	After rebooting ExtremeSwitching X440G2-12p switches, port-related warning logs appear.
<b>ExtremeSwitching X465 Series Switches</b>	
EXOS-18535	Hot-swapping the fans might result in the appearance of i2c optic error messages.
EXOS-24101	SCP sync fails on backup node when downloading an image.
<b>ExtremeSwitching X590 Series Switches</b>	
EXOS-26209	Continuous multicast entry additions and deletions produce IPMC error messages.
<b>ExtremeSwitching X435 Series Switches</b>	
EXOS-24245	Not able to upgrade ExtremeSwitching X435 series switches through Chalet File App Manager.
EXOS-24237	For ExtremeSwitching X435 series switches, Python errors occur when running <code>show vid</code> command.
<b>ACL</b>	
EXOS-24087	Policy with attribute "replace-vlan-id" fails to be installed sometimes and the error message 'No resources for the "replace-vlan-id" option' appears.
<b>Bidirectional Forwarding Detection (BFD)</b>	

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

Defect Number	Description
EXOS-20096	When switches are rebooted with the loopback port disabled, BFD sessions remain in init state.
EXOS-20533	Hardware-assist BFD session goes down after changing the egress VLAN tag.
<b>Extreme Loop Recovery Protocol (ELRP)</b>	
EXOS-10881	Configuring Extreme Loop Recovery Protocol (ELRP) a very large number of ports results in rejection of the command with the message <code>Configuration reply is too big.</code>
<b>EVPN</b>	
EXOS-19816	When VXLAN service VLAN ports go down, <code>BGP.PolicyMgr.RtNotAdvertNHSameTxPeer</code> warning message appears.
<b>Extended Edge Switching</b>	
EXOS-20472	Extended Edge Switching with MLAG configurations become unstable when NetLogin is configured on bridge port extender (BPE) trusted ports.
EXOS-20471	VPEX process ends unexpectedly with signal 11 due to invalid cascaded port configuration.
EXOS-20419	FDB entries learned on NetLogin-enabled bridge port extender (BPE) ports point to the CPU causing traffic loss.
EXOS-20156	With a large amount of multicast traffic on an Extended Edge Switching ring with controlling bridge (CB) MLAG setup, traffic loss and duplicates occur after rebooting a CB.
EXOS-19715	On V300 bridge port extenders (BPEs), OSPFv3 sessions are flapping with 1G link.
EXOS-26534	In Extended Edge Switching with MLAG topology, bridge port extender (BPE) port is not joining a LAG.
EXOS-24070	On Extended Edge Switching topologies, the output of the <code>show port description</code> command displays truncated port numbers of extended slots.
<b>Fabric Attach</b>	
EXOS-20325	The proper behavior of an Fabric Attach (FA) proxy, when connected to a single FA server, having the FA server to transition to FA proxy, and then the original proxy becoming an FA client is not occurring.
EXOS-20113	For Fabric Attach-created dynamic management VLANs, manually disabling DHCP does not work.
EXOS-19674	Static NSI bindings go into the pending state when dynamic binding with identical NSI is removed.
EXOS-19319	On Fabric Attach with MLAG configurations, failover times after switch reboot is slightly increased and needs to be reduced.
EXOS-17727	The command <code>clear counters</code> is not clearing fabric attach statistics.

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

Defect Number	Description
EXOS-16564	If a VLAN in the client is deleted, or if the client is not reachable, the corresponding NSI mappings should timeout at the same time on the MLAG proxy peers, but this is not occurring.
EXOS-20492	Mgmt VLAN information under Fabric Attach gets updated only after receiving second LLDP packet.
EXOS-20302	With an ExtremeSwitching X670-G2 SummitStack acting as a Fabric Attach proxy, you cannot create a VLAN with "v" in the name along with the system VLAN tag number. For example, if the system VLAN is "SYS_VLAN_0200", trying to create a VLAN named "v200" produces an error message stating that the VLAN already exists.
<b>MLAG</b>	
EXOS-24289	When reassembling the fragmented packets, kernel crashes occur randomly,
EXOS-24130	Need a mechanism to bring up MLAG ports in a staggered manner.
<b>MPLS</b>	
EXOS-24040	With SRP configured on VPLS service VMAN, when a primary or secondary port goes down, the other port is not passing traffic through the tunnel.
<b>Network Login</b>	
EXOS-19000	Authenticated NetLogin user's entries are flushed when new member port is added into a LAG group.
EXOS-24112	LLDP packets are not sent and received after successful NetLogin authentication.
EXOS-24088	With NetLogin multiauth mode configured, MAC users are logged as "Unknown" user during un-authentication.
<b>OSPF</b>	
EXOS-20578	When default routes are installed with IP route compression enabled, traffic loss occurs.
EXOS-26245	OSPF sends same instance of LSA twice in single LS update resulting in traffic loss.
<b>PoE</b>	
EXOS-26118	On SummitStacks with PoE-capable switches, running the <code>show tech</code> command causes the PoE process to end unexpectedly.
<b>Policy</b>	
EXOS-20246	With ONEPolicy configured, ARP responses are sent with the incorrect VLAN tag when receiving multicast packets on the inactive VLAN.
<b>STP</b>	
EXOS-26491	In STP, root switch becomes isolated when root bridge goes down.
<b>SummitStack</b>	
EXOS-20349	After enabling VRRP on SummitStacks, source address in ARP packets originated on the Management interface are sent with VRRP Virtual MAC addresses.

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

Defect Number	Description
EXOS-24094	On SummitStacks, when check pointing CFM messages in backup node, dot1ag process ends unexpectedly at random times.
EXOS-20334	Synchronize stacking command fails to synchronize the stack.
EXOS-10879	In SummitStacks, HAL process spike occurs on master node when standby node power is lost.
<b>VXLAN</b>	
EXOS-20153	Need EMS or error log message for when multiple VXLAN RTEP nexthops are pointing to the same interface.
EXOS-16574	In the <i>ExtremeXOS User Guide</i> , need to add a note regarding limitation with VXLAN overlay routing.