# ExtremeXOS Release Notes

## Software Version ExtremeXOS 30.7.2-Patch1-20

9036639-06 Rev AA
July 2021

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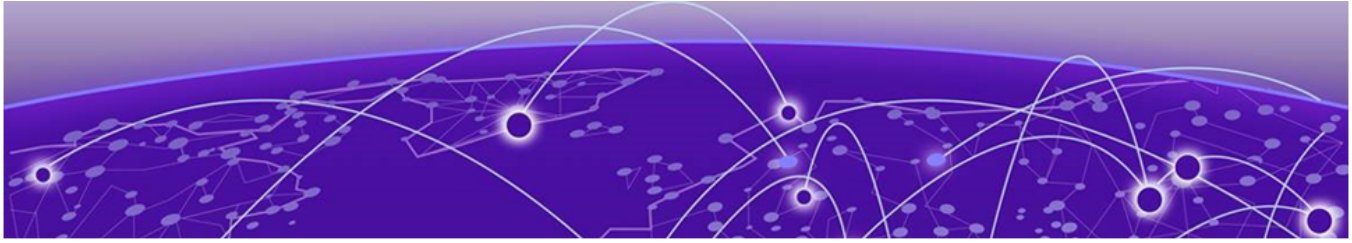

# Table of Contents

# Preface

Read the following topics to learn about:

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

## Conventions

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

### Text Conventions

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

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

**Table 1: Notes and warnings**

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

**Table 2: Text**

| Convention | Description |
|---|---|
| `screen displays` | This typeface indicates command syntax, or represents information as it is displayed on the screen. |
| The words *enter* and *type* | When you see the word *enter* 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 *type*. |
| **Key** names | Key names are written in boldface, for example **Ctrl** or **Esc**. If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press **Ctrl**+**Alt**+**Del** |
| *Words in italicized type* | Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles. |
| NEW! | New information. In a PDF, this is searchable text. |

**Table 3: Command syntax**

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

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

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

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- Email us at documentation@extremenetworks.com.

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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

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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## Related Publications

### ExtremeXOS Publications

- *ACL Solutions Guide*
- *ExtremeXOS 30.7 Command Reference Guide*
- *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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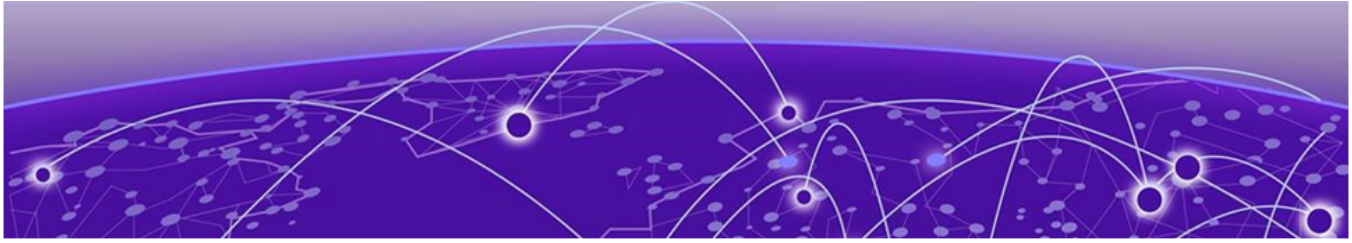


# Overview



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

## Security Information

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 84).

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 `.lst` 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. | | | | | | |

**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 ExtremeCloud™ IQ Agent Support on page 28. |
| 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. | | | | | | |

[a] 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 |
|---|---|---|---|---|---|---|---|
| IP Route Compression | Enabled. | | | | | | |
| 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.) | |

**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 |
|---|---|---|---|---|---|---|---|
| OpenFlow | Disabled. | | | | Not supported. | | |
| OSPF | Disabled. | | | | | | |
| OVSDB | Disabled. | | | | | | |
| Passwords | Plain text password entry not allowed. | | | | | | |
| PIM | Disabled. | | | | | | |
| PIM Snooping | Disabled. | | | | | | |
| PoE<br>Fast PoE<br>Perpetual PoE | Enabled.<br>N/A.<br>N/A. | | | Enabled.<br>Disabled.<br>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. | — | — | | |

**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 |
|---|---|---|---|---|---|---|---|
| Stacking auto-discovery | N/A. | N/A. | | Enabled. | | | |
| STP | Enabled. | | | | | | |
| Syslog | Disabled. | | | | | | |
| 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-`<br>Example: `onie-22.2.1.2.xos`<br><br>Note: These image files use the Open Network Install Environment (ONIE). |
| ExtremeSwitching X440-G2, X450-G2, X460-G2, X670-G2, X620, | `summitX-`<br>Example: `summitX-22.2.1.2.xos` |
| ExtremeSwitching X435 | `summitlite_arm-`<br>Example:<br>`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 1.1.12.

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-18535* in the topic Resolved Issues in ExtremeXOS 30.7 on page 95.

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 28.

## 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.<br><br>Note: 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.<br><br>Note: 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:
<Erro: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 24). 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<br>X435-8P-4S<br>X435-8P-2T-W<br>X435-24T-4S<br>X435-24P-4S |
| ExtremeSwitching X440-G2 | X440-G2-24P-10GE4<br>X440-G2-48P-10GE4<br>X440-G2-12T-10GE4<br>X440-G2-12P-10GE4<br>X440-G2-24T-10GE4<br>X440-G2-48T-10GE4 |
| ExtremeSwitching X450-G2 | X450-G2-24P-10GE<br>X450-G2-48P-10GE<br>X450-G2-24P-GE4<br>X450-G2-48P-GE4 |
| ExtremeSwitching X460-G2 | X460-G2-24P-10GE4<br>X460-G2-48P-10GE4<br>X460-G2-16MP-32P-10GE4<br>X460-G2-24P-48HP-10GE4 |
| ExtremeSwitching X465 | X465-48P<br>X465-24MU-24W<br>X465-24W<br>X465-48W<br>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/.

## Compatibility with Extreme Management Center (Formerly NetSight)

ExtremeXOS 30.7 is compatible with specific versions of Extreme Management Center. Navigate to the following site and select your version of XMC for more information: 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/.

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

The following third-party products have been tested for ExtremeXOS 30.7.2.

## Tested RADIUS Servers

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS

## Tested Third-Party Clients

The following third-party clients are fully tested:

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

# Extreme Switch Security Assessment

## DoS Attack Assessment

Tools used to assess DoS attack vulnerability:

- Network Mapper (NMAP)

## ICMP Attack Assessment

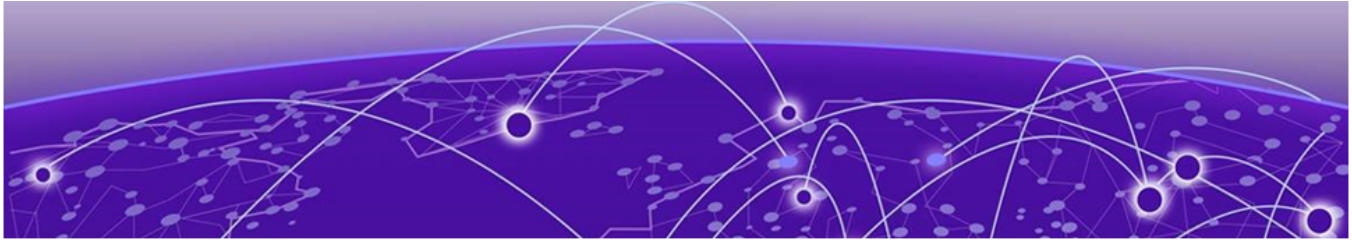
Tools used to assess ICMP attack vulnerability:

- SSPing
- Twinge
- Nuke
- WinFreeze

## Port Scan Assessment

Tools used to assess port scan assessment:

- Nessus



# Limits

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 |
|---|---|---|
| AAA (local)—maximum number of admin and local user accounts. | ExtremeSwitching X435 | 16 |
| Access lists (meters)—maximum number of meters. | ExtremeSwitching X435 | 512 ingress |
| Access lists (policies)—suggested maximum number of lines in a single policy file. | ExtremeSwitching X435 | 300,000 |
| Access lists (policies)—maximum number of rules in a single policy file.[a] | ExtremeSwitching X435 | 1,024 ingress<br>0 egress |
| Access lists (slices)—number of ACL slices. | ExtremeSwitching X435 | 8 ingress only |
| ACL Per Port Meters—number of meters supported per port. | ExtremeSwitching X435 | 8 |
| ACL port ranges | ExtremeSwitching X435 | 32 |
| Meters Packets-Per-Second Capable | ExtremeSwitching X435 | Yes |
| AVB (audio video bridging)—maximum number of active streams. | ExtremeSwitching X435 | 512 |
| BOOTP/DHCP relay—maximum number of BOOTP or DHCP servers per virtual router. | ExtremeSwitching X435 | 8 |
| BOOTP/DHCP relay—maximum number of BOOTP or DHCP servers per VLAN. | ExtremeSwitching X435 | 8 |
| BOOTP/DHCP relay—maximum number of DHCPv4/v6 relay agents. | ExtremeSwitching X435 | 30 |
| Connectivity fault management (CFM)—maximum number or CFM domains. | ExtremeSwitching X435 | 8 |
| CFM—maximum number of CFM associations. | ExtremeSwitching X435 | 256 |
| CFM—maximum number of CFM up end points. | ExtremeSwitching X435 | 32 |
| CFM—maximum number of CFM down end points. | ExtremeSwitching X435 | 32 |

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

| Metric | Product | Limit |
|---|---|---|
| CFM—maximum number of CFM remote end points per up/down end point. | ExtremeSwitching X435 | 2,000 |
| CFM—maximum number of dot1ag ports. | ExtremeSwitching X435 | 128 |
| CFM—maximum number of CFM segments. | ExtremeSwitching X435 | 1,000 |
| CFM—maximum number of MIPs. | ExtremeSwitching X435 | 256 |
| DHCPv6 Prefix Delegation Snooping—Maximum number of DHCPv6 prefix delegation snooped entries. | ExtremeSwitching X435 | 30 (with static routes) |
| DHCP snooping entries—maximum number of DHCP snooping entries. | ExtremeSwitching X435 | 30 |
| Dynamic ACLs—maximum number of ACLs processed per second.<br><br>Note: Limits are load-dependent. | ExtremeSwitching X435<br>with 50 DACLs<br>with 500 DACLs | 10<br>5 |
| EAPS domains—maximum number of EAPS domains. | ExtremeSwitching X435 | 4 |
| EAPSv1 protected VLANs—maximum number of protected VLANs. | ExtremeSwitching X435 | 1,000 |
| ERPS domains—maximum number of ERPS domains with or without CFM configured. | ExtremeSwitching X435 | 4 |
| ERPSv1 protected VLANs—maximum number of protected VLANs. | ExtremeSwitching X435 | 1,000 |
| ELSM (vlan-ports)—maximum number of VLAN ports. | ExtremeSwitching X435 | 2,000 |
| Forwarding rate—maximum L3 software forwarding rate. | ExtremeSwitching X435 | 9,000 pps |
| FDB (unicast blackhole entries)—maximum number of unicast blackhole FDB entries. | ExtremeSwitching X435 | 16,019 |
| FDB (multicast blackhole entries)—maximum number of multicast blackhole FDB entries. | ExtremeSwitching X435 | 16,384 |
| FDB (maximum L2 entries)—maximum number of MAC addresses. | ExtremeSwitching X435 | 16,384 [g] |

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

| Metric | Product | Limit |
|---|---|---|
| FDB (maximum L2 entries)—maximum number of multicast FDB entries. | ExtremeSwitching X435 | 512 |
| Identity management—maximum number of Blacklist entries. | ExtremeSwitching X435 | 512 |
| Identity management—maximum number of Whitelist entries. | ExtremeSwitching X435 | 512 |
| Identity management—maximum number of roles that can be created. | ExtremeSwitching X435 | 64 |
| Identity management—maximum role hierarchy depth allowed. | ExtremeSwitching X435 | 5 |
| Identity management—maximum number of attribute value pairs in a role match criteria. | ExtremeSwitching X435 | 16 |
| Identity management—maximum number of child roles for a role. | ExtremeSwitching X435 | 8 |
| Identity management—maximum number of policies/dynamic ACLs that can be configured per role. | ExtremeSwitching X435 | 8 |
| Identity management—maximum number of LDAP servers that can be configured. | ExtremeSwitching X435 | 8 |
| Identity management—maximum number of Kerberos servers that can be configured. | ExtremeSwitching X435 | 20 |
| Identity management—maximum database memory size. | ExtremeSwitching X435 | 512 |
| Identity management—recommended number of identities per switch.<br><br>Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms. | ExtremeSwitching X435 | 100 |
| Identity management—recommended number of ACL entries per identity.<br><br>Note: 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 |
|---|---|---|
| **Identity management**—maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file. | ExtremeSwitching X435 | 500 |
| **IGMP snooping per VLAN filters**—maximum number of VLANs supported in per-VLAN IGMP snooping mode. | ExtremeSwitching X435 | 500 |
| **IGMPv2 subscriber**—maximum number of IGMPv2 subscribers per port.[n] | ExtremeSwitching X435 | 2,500 |
| **IGMPv2 subscriber**—maximum number of IGMPv2 subscribers per switch.[n] | ExtremeSwitching X435 | 12,500 |
| **IGMPv3 maximum source per group**—maximum number of source addresses per group. | ExtremeSwitching X435 | 250 |
| **IGMPv3 subscriber**—maximum number of IGMPv3 subscribers per port.[n] | ExtremeSwitching X435 | 1,000 |
| **IGMPv3 subscriber**—maximum number of IGMPv3 subscribers per switch.[n] | ExtremeSwitching X435 | 10,000 |
| **IP ARP entries in software**—maximum number of IP ARP entries in software.<br><br>**Note:** Might be limited by hardware capacity of FDB (maximum L2 entries). | ExtremeSwitching X435 | 20,424 |
| **IPv4 ARP entries in hardware with minimum LPM routes**—maximum recommended number of IPv4 ARP entries in hardware, with minimum LPM routes present. Assumes number of IP route reserved entries is 100 or less. | ExtremeSwitching X435 | 509 [h] |
| **IPv4 ARP entries in hardware with maximum LPM routes**—maximum recommended number of IPv4 ARP entries in hardware, with maximum LPM routes present. Assumes number of IP route reserved entries is “maximum.” | ExtremeSwitching X435 | 500 [h] |

**Table 11: Supported Limits for Value 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 X435 | 3,100 [h] |
| IPv4 routes—maximum number of static IPv4 routes in software (combination of unicast and multicast routes). | ExtremeSwitching X435 | 32 |
| IPv4 routes (LPM entries in hardware)— number of IPv4 routes in hardware. | ExtremeSwitching X435 | 32 |
| IPv6 addresses on an interface—maximum number of IPv6 addresses on an interface. | ExtremeSwitching X435 | 15 |
| IPv6 addresses on a switch—maximum number of IPv6 addresses on a switch. | ExtremeSwitching X435 | 15 |
| IPv6 host entries in hardware—maximum number of IPv6 neighbor entries in hardware. | ExtremeSwitching X435 | 500 |
| IPv6 routes in software—maximum number of static IPv6 routes in software. | ExtremeSwitching X435 | 16 |
| IPv6 routes (LPM entries in hardware)—maximum number of IPv6 routes in hardware. | ExtremeSwitching X435 | 16 |
| IP router interfaces—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching X435 | 30 |
| IP unicast static routes—maximum number of permanent IP unicast routes. | ExtremeSwitching X435 | 32 |
| IP multinetting (secondary IP addresses)—maximum number of secondary IP addresses per VLAN. | ExtremeSwitching X435 | 30 |
| Jumbo frames—maximum size supported for jumbo frames, including the CRC. | ExtremeSwitching X435 | 9,216 |

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

| Metric | Product | Limit |
|---|---|---|
| Layer-2 IPMC forwarding caches—(IGMP/MLD/PIM snooping) in mac-vlan mode.<br><br>Note:<br>• The internal lookup table configuration used is "l2-and-l3".<br>• IPv6 and IPv4 L2 IPMC scaling is the same for this mode.<br>• Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same. | ExtremeSwitching X435 | 5,000 |
| Layer-3 IPv4 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).<br><br>Note:<br>• Limit value is the same for MVR senders, PIM Snooping entries. PIM SSM cache, IGMP senders, PIM cache.<br>• The internal lookup table configuration used is "more l3-and-ipmc".<br>• Assumes source-group-vlan mode as look up key.<br>• Layer 3 IPMC cache limit in mixed mode also has the same value. | ExtremeSwitching X435 | 1,500 |
| Layer-3 IPv6 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).<br><br>Note:<br>• Limit value is the same for MLD sender per switch, PIM IPv6 cache.<br>• The internal lookup table configuration used is "more l3-and-ipmc".<br>• Assumes source-group-vlan mode as lookup key. | ExtremeSwitching X435 | 700 |

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

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

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

| Metric | Product | Limit |
|---|---|---|
| Multicast listener discovery (MLD) snooping per-VLAN filters—maximum number of VLANs supported in per-VLAN MLD snooping mode. | ExtremeSwitching X435 | 63 |
| Multicast listener discovery (MLD)v1 subscribers—maximum number of MLDv1 subscribers per port.[n] | ExtremeSwitching X435 | 2,500 |
| Multicast listener discovery (MLD)v1 subscribers—maximum number of MLDv1 subscribers per switch.[n] | ExtremeSwitching X435 | 12,500 |
| Multicast listener discovery (MLD)v2 subscribers—maximum number of MLDv2 subscribers per port.[n] | ExtremeSwitching X435 | 2,000 |
| Multicast listener discovery (MLD)v2 subscribers—maximum number of MLDv2 subscribers per switch.[n] | ExtremeSwitching X435 | 10,000 |
| Multicast listener discovery (MLD)v2 maximum source per group—maximum number of source addresses per group. | ExtremeSwitching X435 | 200 |
| Network Login—maximum number of clients being authenticated on MAC-based VLAN enabled ports. | ExtremeSwitching X435 | 1,024 |
| Network Login—maximum number of dynamic VLANs. | ExtremeSwitching X435 | 1,024 |
| Network Login VLAN VSAs—maximum number of VLANs a client can be authenticated on at any given time. | ExtremeSwitching X435 | 10 |
| Network Service Identifiers (NSI)/ VLAN mappings—maximum number of VLANs to NSI mappings. | ExtremeSwitching X435 | 94 |
| ONEPolicy Roles/Profiles—maximum number of policy roles/ profiles. | ExtremeSwitching X435 | 63 |
| ONEPolicy Rules per Role/Profile—maximum number of rules per role/policy. | ExtremeSwitching X435 | IPv4 Rules: 128<br>L2 Rules: 56 |

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

| Metric | Product | Limit |
|---|---|---|
| ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per switch with TCI-Overwrite disabled.<br><br>Note: The maximum values assume 75% utilization of VLAN-XLATE hash table. | ExtremeSwitching X435 | 192 |
| ONEPolicy Authenticated Users per Port per Switch— maximum number of authenticated users per port per switch with TCI overwrite disabled.<br><br>Note: The maximum values assume 75% utilization of VLAN-XLATE hash table. | ExtremeSwitching X435 | 187 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—total maximum number of unique permit/deny traffic classification rules types (system/stack). | ExtremeSwitching X435 | 184 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype). | ExtremeSwitching X435 | 128 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port). | ExtremeSwitching X435 | 56 |
| Policy-based routing (PBR) redundancy—maximum number of flow-redirects. | ExtremeSwitching X435 | 256 [o] |
| Policy-based routing (PBR) redundancy—maximum number of next hops per each flow-direct. | ExtremeSwitching X435 | 32 [o] |
| Private VLANs—maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN. | ExtremeSwitching X435 | 15 |

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

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

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

| Metric | Product | Limit |
|---|---|---|
| Spanning Tree (802.1d domains)—maximum number of 802.1d domains per port. | ExtremeSwitching X435 | 1 |
| Spanning Tree (number of ports)—maximum number of ports including all Spanning Tree domains. | ExtremeSwitching X435 | 1,024 |
| Spanning Tree (maximum VLANs)—maximum number of STP-protected VLANs (dot1d and dot1w). | ExtremeSwitching X435 | 256 |
| SSH (number of sessions)—maximum number of simultaneous SSH sessions. | ExtremeSwitching X435 | 8 |
| Static MAC multicast FDB entries—maximum number of permanent multicast MAC entries configured into the FDB. | ExtremeSwitching X435 | 1,024 |
| Syslog servers—maximum number of simultaneous Syslog servers that are supported. | ExtremeSwitching X435 | 16 |
| Syslog targets—maximum number of configurable Syslog targets. | ExtremeSwitching X435 | 16 |
| Telnet (number of sessions)—maximum number of simultaneous Telnet sessions. | ExtremeSwitching X435 | 8 |
| Virtual routers—maximum number of user-created virtual routers that can be created on a switch. | ExtremeSwitching X435 | 16 (local-only VRs) |
| Virtual router forwarding (VRFs)—maximum number of VRFs that can be created on a switch.<br><br>Note: * Subject to other system limitations. | ExtremeSwitching X435 | 16 (local-only VRFs) |
| VLAN aggregation—maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs. | ExtremeSwitching X435 | 1,000 |
| VLANs—includes all VLANs. | ExtremeSwitching X435 | 4,094 |
| VLANs (Layer 2)—maximum number of Layer 2 VLANs. | ExtremeSwitching X435 | 4,094 |

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

| Metric | Product | Limit |
|---|---|---|
| VLANs (Layer 3)—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching X435 | IPv4: 30<br>IPv6: 15 |
| VLANs (maximum active port-based)—maximum active ports per VLAN when 1,000 VLANs are configured with default license. | ExtremeSwitching X435 | 28 |
| VLAN Port Interfaces (VPIF)—maximum number of VLAN port interfaces. | ExtremeSwitching X435 | 38,400 |
| VLANs (maximum active protocol-sensitive filters)—number of simultaneously active protocol filters in the switch. | ExtremeSwitching X435 | 16 |
| VLAN translation—maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN. | ExtremeSwitching X435 | 15 |
| VLAN translation—maximum number of translation VLAN pairs with an IP address on the translation VLAN.<br><br>Note: This limit is dependent on the maximum number of translation VLAN pairs in an L2-only environment if the configuration includes tagged and translated ports. | ExtremeSwitching X435 | 15 |
| VLAN translation—maximum number of translation VLAN pairs in an L2-only environment. | ExtremeSwitching X435 | 15 |
| XML requests—maximum number of XML requests per second.<br><br>Note: 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 |
|---|---|---|
| AAA (local)—maximum number of admin and local user accounts. | All platforms, except X435 | 16 |
| Access lists (meters)—maximum number of meters. | ExtremeSwitching X620, X440-G2 | 1,024 ingress<br>256 egress |
| | ExtremeSwitching X670-G2, X450-G2, X460-G2 | 1,024 ingress<br>512 egress |
| | ExtremeSwitching X870, X690, X590, X465 | 2,048 ingress<br>512 egress |
| | ExtremeSwitching X695 | 6,000 ingress<br>2,000 egress |
| Access lists (policies)—suggested maximum number of lines in a single policy file. | All platforms, except X435 | 300,000 |
| Access lists (policies)—maximum number of rules in a single policy file.[a] | ExtremeSwitching X460-G2, X450-G2, X670-G2 | 4,096 ingress<br>1,024 egress |
| | ExtremeSwitching X620, X440-G2 | 2,048 ingress<br>512 egress |
| | ExtremeSwitching X870 | 3,072 ingress<br>1,024 egress |
| | ExtremeSwitching X690, X590, X465, X695 | 8,192 ingress<br>1,024 egress |
| Access lists (policies)—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 |
| Access lists (slices)—number of ACL slices. | ExtremeSwitching X460-G2, X450-G2 | 16 ingress<br>4 egress |
| | ExtremeSwitching X670-G2, X690, X590, X465, X695 | 12 ingress<br>4 egress |
| | ExtremeSwitching X440-G2, X620 | 8 ingress<br>4 egress |
| | ExtremeSwitching X870 | 4 ingress<br>4 egress |
| Access lists (slices)—number of ACL slices in first stage (VFP). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X465, X620, X440-G2, X870, X690, X590, X695 | 4 ingress only |

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

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

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

| Metric | Product | Limit |
|---|---|---|
| CFM—maximum number of CFM associations.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 256 |
| CFM—maximum number of CFM up end points.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 32 |
| CFM—maximum number of CFM down end points.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X460-G2 | 32<br><br>256 (non-load shared ports)<br>32 (load shared ports) |
| CFM—maximum number of CFM remote end points per up/down end point.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 2,000 |
| CFM—maximum number of dot1ag ports.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 128 |
| CFM—maximum number of CFM segments.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 1,000 |
| CFM—maximum number of MIPs.<br><br>Note: With Advanced Edge license or higher. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 256 |
| CLEAR-Flow—total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs. | ExtremeSwitching X460-G2, X670-G2, X450-G2<br><br>ExtremeSwitching X440-G2, X620<br><br>ExtremeSwitching X870<br><br>ExtremeSwitching X690, X590, X465, X695 | 4,094<br><br>1,024<br><br>3,072<br><br>8,192 |

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

| Metric | Product | Limit |
|---|---|---|
| Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)—maximum number of DCBX application TLVs. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 8 |
| DHCPv6 Prefix Delegation Snooping—Maximum number of DHCPv6 prefix delegation snooped entries. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 256 (with underlying protocol RIPng)<br>128 (with underlying protocol OSPFv3)<br>1,024 (with static routes) |
| DHCP snooping entries—maximum number of DHCP snooping entries. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 2,048 |
| Dynamic ACLs—maximum number of ACLs processed per second.<br><br>Note: Limits are load-dependent. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695<br>with 50 DACLs<br>with 500 DACLs | <br><br>10<br>5 |
| EAPS domains—maximum number of EAPS domains.<br><br>Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.<br><br>Note: You can increase the number of domains by upgrading to the Advanced Edge license. | ExtremeSwitching X670-G2, X450-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 4 |
| EAPSv1 protected VLANs—maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2<br>ExtremeSwitching X870, X690, X590, X465, X695 | 1,000<br>2,000 |
| ERPS domains—maximum number of ERPS domains with or without CFM configured.<br><br>Note: You can increase the number of domains by upgrading to the Advanced Edge license. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 4 |
| ERPSv1 protected VLANs—maximum number of protected VLANs. | ExtremeSwitching X870, X690, X590, X465, X695<br>ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2 | 2,000<br>1,000 |

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

| Metric | Product | Limit |
|---|---|---|
| ERPSv2 protected VLANs—maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690 , X590, X465, X695 | 2,000 |
| | ExtremeSwitchingX620, X440-G2 | 500 |
| ELSM (vlan-ports)—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 |
| Extended Edge Switching maximum BPEs—maximum number of attached bridge port extenders (BPEs). | ExtremeSwitching X465, X590, X670-G2, X690 | 48 |
| Extended Edge Switching maximum cascade ports—maximum number of upstream ports on bridge port extenders (BPEs). | ExtremeSwitching X465, X590, X670-G2, X690 | 2 on V400-24 and V300 models<br>4 on V400-48 models |
| Extended Edge Switching maximum tiers—maximum number of cascade levels (tiers) of bridge port extenders (BPEs). | ExtremeSwitching X465, X590, X670-G2, X690 | 4 (except for V300-8P-2T-W, which support 1 tier) |
| Extended Edge Switching maximum ring BPEs—maximum number of bridge port extenders (BPEs) in a ring topology. | ExtremeSwitching X465, X590, X670-G2, X690 | 8 |
| Extended Edge Switching VLAN+ port memberships—maximum number of VLAN+ (extended) port memberships. | ExtremeSwitching X465, X590, X670-G2, X690 | 12,000 in hash mode (default)<br>131,000 in port-group mode |
| Forwarding rate—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[f] |
| | ExtremeSwitching X670-G2 | 294,912[f] |
| | ExtremeSwitching X450-G2 | 34,816[f] |
| | ExtremeSwitching X620, X440-G2 | 16,384[f] |
| | ExtremeSwitching X870 | 139,264[f] |
| | ExtremeSwitching X690, X590, X465 | 278,528[f] |
| | ExtremeSwitching X695 | 294,912 [f] |
| 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[g] |
| | ExtremeSwitching X670-G2 | 294,912[g] |
| | ExtremeSwitching X450-G2 | 68,000[g] |
| | ExtremeSwitching X620, X440-G2 | 16,384 |
| | ExtremeSwitching X870 | 139,264[g] |
| | ExtremeSwitching X690, X590, X465, X695 | 278,528[g] |
| | ExtremeSwitching X695 | 294,912 [g] |
| 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 |
|---|---|---|
| Identity management—maximum number of LDAP servers that can be configured. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 8 |
| Identity management—maximum number of Kerberos servers that can be configured. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 20 |
| Identity management—maximum database memory size. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 512 |
| Identity management—recommended number of identities per switch.<br><br>Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 100 |
| Identity management—recommended number of ACL entries per identity.<br><br>Note: Number of ACLs per identity, based on system ACL limitation. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 20 |
| Identity management—maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 500 |
| IGMP snooping per VLAN filters—maximum number of VLANs supported in per-VLAN IGMP snooping mode. | ExtremeSwitching X460-G2, X870<br>ExtremeSwitching X450-G2<br>ExtremeSwitching X670-G2 , X695<br>ExtremeSwitching X620, X440-G2<br>ExtremeSwitching X690, X590, X465 | 1,500<br>2,048<br>2,000<br>1,000<br>4,000 |
| IGMPv1/v2 SSM-map entries—maximum number of IGMPv1/v2 SSM mapping entries. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 500 |
| IGMPv1/v2 SSM-map entries—maximum number of sources per group in IGMPv1/v2 SSM mapping entries. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 50 |
| IGMPv2 subscriber—maximum number of IGMPv2 subscribers per port. [n] | ExtremeSwitching X670-G2, X460-G2, X450-G2<br>ExtremeSwitching X440-G2, X620<br>ExtremeSwitching X870, X690, X590, X465, X695 | 4,000<br>3,500<br>4,000 |

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

| Metric | Product | Limit |
|---|---|---|
| IGMPv2 subscriber—maximum number of IGMPv2 subscribers per switch.[n] | 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 |
| IGMPv3 maximum source per group—maximum number of source addresses per group. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X770, X620, X440-G2, X870, X690, X590, X465, X695 | 250 |
| IGMPv3 subscriber—maximum number of IGMPv3 subscribers per port.[n] | ExtremeSwitching X670-G2, X460-G2, X450-G2 | 4,000 |
| | ExtremeSwitching X440-G2, X620 | 3,500 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 4,000 |
| IGMPv3 subscriber—maximum number of IGMPv3 subscribers per switch.[n] | ExtremeSwitching X460-G2, X450-G2 | 20,000 |
| | ExtremeSwitching X670-G2 | 30,000 |
| | ExtremeSwitching X620, X440-G2 | 17,500 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 45,000 |
| IP ARP entries in software—maximum number of IP ARP entries in software.<br><br>Note: Might be limited by hardware capacity of FDB (maximum L2 entries). | ExtremeSwitching X670-G2 | 131,072 (up to)[h] |
| | ExtremeSwitching X460-G2 | 57,344 (up to)[h] |
| | ExtremeSwitching X450-G2 | 47,000 (up to)[h] |
| | ExtremeSwitching X440-G2, X620 | 20,480 |
| | ExtremeSwitching X870 | 94,206 (up to)[h] |
| | ExtremeSwitching X690, X590, X465 | 157,694 (up to)[h] |
| | ExtremeSwitching X695 | 184,318 (up to)[h] |

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

| Metric | Product | Limit |
|---|---|---|
| IPv4 ARP entries in hardware with minimum LPM routes—maximum recommended number of IPv4 ARP entries in hardware, with minimum LPM routes present. Assumes number of IP route reserved entries is 100 or less. | ExtremeSwitching X870 | 74,000 (up to)[h] |
| | ExtremeSwitching X460-G2 | 50,000 (up to)[h] |
| | ExtremeSwitching X670-G2 | 108,000 (up to)[h] |
| | ExtremeSwitching X450-G2 | 39,000 (up to)[h] |
| | ExtremeSwitching X620 | 1,500 |
| | ExtremeSwitching X440-G2 | 1,000 |
| | ExtremeSwitching X690, X590, X465 | 119,000 (up to)[h] |
| | ExtremeSwitching X695 | 46,000 (up to)[h] |
| IPv4 ARP entries in hardware with maximum LPM routes—maximum recommended number of IPv4 ARP entries in hardware, with maximum LPM routes present. Assumes number of IP route reserved entries is “maximum.” | ExtremeSwitching X870 | 64,000 (up to)[h] |
| | ExtremeSwitching X460-G2 | 43,000 (up to)[h] |
| | ExtremeSwitching X670-G2 | 98,000 (up to)[h] |
| | ExtremeSwitching X450-G2 | 29,000 (up to)[h] |
| | ExtremeSwitching X620 | 1,500 |
| | ExtremeSwitching X440-G2 | 1,000 |
| | ExtremeSwitching X690, X590, X465 | 109,000 (up to)[h] |
| | ExtremeSwitching X695 | 125,000 (up to)[h] |
| IP flow information export (IPFIX)—number of simultaneous flows. | ExtremeSwitching X460-G2 | 2,048 ingress<br>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)[h] |
| | ExtremeSwitching X460-G2 | 73,000[h] |
| | ExtremeSwitching X670-G2 | 176,000 (up to)[h] |
| | ExtremeSwitching X450-G2 | 61,000 (up to)[h] |
| | ExtremeSwitching X440-G2, X620 | 3,500 |
| | ExtremeSwitching X690, X590, X465 | 216,000 (up to)[h] |
| | ExtremeSwitching X695 | 241,000 (up to)[h] |
| 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[q] |
| | 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[h] |
| | ExtremeSwitching X460-G2 | 22,000[h] |
| | ExtremeSwitching X450-G2 | 12,000[h] |
| | ExtremeSwitching X440-G2 | 1,000 |
| | ExtremeSwitching X620 | 1,500 |
| | ExtremeSwitching X690, X590, X465 | 24,500[h] |
| | ExtremeSwitching X870 | 22,000[h] |
| | ExtremeSwitching X695 | 57,000 [h] |
| IPv6 routes in software—maximum number of IPv6 routes in software, including static routes and routes from all routing protocols. | ExtremeSwitching X450-G2, X460-G2, X620, X440-G2 | 25,000 |
| | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 65,000[q] |
| IPv6 routes (LPM entries in hardware)—maximum number of IPv6 routes in hardware. | ExtremeSwitching X460-G2 | 6,000 |
| | ExtremeSwitching X450-G2 | 8,000 |
| | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 65,000[q] |
| | ExtremeSwitching X620, X440-G2 | 240 |
| IPv6 routes with a mask greater than 64 bits in hardware—maximum number of such IPv6 LPM routes in hardware. | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 8,192[r] |
| | ExtremeSwitching X440-G2, X620 | 1,024 |
| | ExtremeSwitching X450-G2, X460-G2 | 2,048 |
| IPv6 route sharing in hardware—route mask lengths for which ECMP is supported in hardware. | ExtremeSwitching X460-G2, X450-G2, X620 | 0–64<br>>64 single path only |
| | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 0–128[r] |
| | ExtremeSwitching X440-G2 | Not supported |
| IP router interfaces—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695 | 2,048 |
| | ExtremeSwitching X620, X440-G2 | 510 |
| 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 |
|---|---|---|
| IP route sharing (maximum gateways)—Configurable maximum number of gateways used by equal cost multipath OSPF, BGP, IS-IS, static routes, or L2VPNs. Static routes, OSPF, and BGP are limited to 64 ECMP gateways per destination, while IS-IS is limited to 8. L2VPNs are limited to 16 LSPs per pseudowire on platforms that support 32 gateways, and 64 LSPs per pseudowire on platforms that support 64 gateways. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X620, X870, X690, X590, X465, X695 | 2, 4, 8, 16, 32, or 64 |
| | ExtremeSwitching 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 |
| | Note: The values here represent the maximum attainable ECMP groups of which, due to the RIOT feature, half are reserved for overlay and half for underlay routing. For more information about RIOT, see the *ExtremeXOS 30.7 User Guide*. | |
| | 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)<br>if maximum gateways is 32<br>if maximum gateways is 64 | 1,022<br>510<br>254 |
| | ExtremeSwitching X440-G2 | N/A |
| IP multinetting (secondary IP addresses)—maximum number of secondary IP addresses per VLAN. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 255 |
| Jumbo frames—maximum size supported for jumbo frames, including the CRC. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 9,216 |
| L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch—maximum number of VCCV enabled VPLS VPNs. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465 | 16 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |
| L2 VPN: VPLS MAC addresses—maximum number of MAC addresses learned by a switch. | ExtremeSwitching X670-G2, X690, X590, X465 | 140,000 |
| | ExtremeSwitching X460-G2 | 55,000 |
| | ExtremeSwitching X870 | 65,000 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |
| L2 VPN: VPLS VPNs—maximum number of VPLS virtual private networks per switch. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465 | 1,023 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |
| L2 VPN: VPLS peers—maximum number of VPLS peers per VPLS instance. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465 | 64 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |
| L2 VPN: LDP pseudowires—maximum number of pseudowires per switch. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465 | 7,000 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |
| L2 VPN: static pseudowires—maximum number of static pseudowires per switch. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465 | 7,000 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |
| L2 VPN: Virtual Private Wire Service (VPWS) VPNs—maximum number of virtual private networks per switch. | ExtremeSwitching X670-G2, X870, X690, X590, X465 | 4,090 |
| | ExtremeSwitching X460-G2 | 1,023 |
| | ExtremeSwitching X450-G2, X620, X440-G2, X695 | N/A |

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

| Metric | Product | Limit |
|---|---|---|
| Layer-2 IPMC forwarding caches—(IGMP/MLD/PIM snooping) in mac-vlan mode.<br><br>Note:<br>• The internal lookup table configuration used is "l2-and-l3".<br>• IPv6 and IPv4 L2 IPMC scaling is the same for this mode.<br>• Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same. | ExtremeSwitching X670-G2, X695<br>ExtremeSwitching X460-G2<br>ExtremeSwitching X450-G2<br>ExtremeSwitching X620, X440-G2<br>ExtremeSwitching X870<br>ExtremeSwitching X690, X590, X465 | 73,000<br>24,000<br>14,000<br>5,000<br>36,000<br>67,000 |
| Layer-3 IPv4 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).<br><br>Note:<br>• Limit value is the same for MVR senders, PIM Snooping entries. PIM SSM cache, IGMP senders, PIM cache.<br>• The internal lookup table configuration used is "more l3-and-ipmc".<br>• Assumes source-group-vlan mode as look up key.<br>• Layer 3 IPMC cache limit in mixed mode also has the same value. | ExtremeSwitching X460-G2<br>ExtremeSwitching X450-G2<br>ExtremeSwitching X670-G2<br>ExtremeSwitching X620, X440-G2<br>ExtremeSwitching X870<br>ExtremeSwitching X690, X590, X465<br>ExtremeSwitching X695 | 26,000<br>21,000<br>77,500<br>1,500<br>52,000<br>93,000<br>104,000 |
| Layer-3 IPv6 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).<br><br>Note:<br>• Limit value is the same for MLD sender per switch, PIM IPv6 cache.<br>• The internal lookup table configuration used is "more l3-and-ipmc".<br>• Assumes source-group-vlan mode as lookup key. | ExtremeSwitching X670-G2<br>ExtremeSwitching X460-G2<br>ExtremeSwitching X450-G2<br>ExtremeSwitching X620, X440-G2<br>ExtremeSwitching X870<br>ExtremeSwitching X690, X590, X465<br>ExtremeSwitching X695 | 30,000<br>14,000<br>10,000<br>700<br>18,000<br>48,000<br>52,000 |

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

| Metric | Product | Limit |
|---|---|---|
| Load sharing—maximum number of load sharing groups.<br><br>Note: The actual number of load-sharing groups that can be configured is limited by the number of physical ports present in the switch or SummitStack. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 128 |
| Load sharing—maximum number of ports per load-sharing group. | 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 |
| Logged messages—maximum number of messages logged locally on the system. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 20,000 |
| MAC-based security—maximum number of MAC-based security policies. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 1,024 |
| MAC Locking—Maximum number of MAC locking stations that can be learned on a port. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 64 (static MAC locking stations)<br>600 (first arrival MAC locking stations) |
| Meters—maximum number of meters supported. | ExtremeSwitching X460-G2, X450-G2, X670-G2, X440-G2, X620, X870, X690, X590 , X465, X695 | 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<br><br>Note: Only two or four mirroring instances will be active at a time, depending on the mirroring filter added to it. There are four hardware resource slots. Each single instance uses one such slot, while each ingress plus egress instance uses two slots. You can use a total of four slots, while there are no more than two egress instances. The maximum possible combination for mirroring instances:<br><br>1. 4 ingress<br>2. 3 ingress + 1 egress<br>3. 2 ingress + 2 egress<br>4. 2 (ingress + egress)<br>5. 1 (ingress + egress) + 2 ingress<br>6. 1 (ingress + egress) + 1 egress + 1 ingress | 16 (including default mirroring instance) |
| | ExtremeSwitching X620, X440-G2<br><br>Note: For stacks containing X620 or X440-G2, maximum supported egress mirror instances is 1. | 1 (egress) |
| Mirroring (filters)—maximum number of mirroring filters.<br><br>Note: This is the number of filters across all the active mirroring instances. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 128 |
| Mirroring, one-to-many (filters)—maximum number of one-to-many mirroring filters.<br><br>Note: This is the number of filters across all the active mirroring instances. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 128 |
| Mirroring, one-to-many (monitor port)—maximum number of one-to-many monitor ports. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 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 |
|---|---|---|
| Multicast listener discovery (MLD)v1 subscribers—maximum number of MLDv1 subscribers per port.[n] | ExtremeSwitching X670-G2, X450-G2, X460-G2 | 4,000 |
| | ExtremeSwitching X620, X440-G2 | 3,500 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 4,000 |
| Multicast listener discovery (MLD)v1 subscribers—maximum number of MLDv1 subscribers per switch.[n] | ExtremeSwitching X460-G2, X450-G2, X620, X440-G2 | 10,000 |
| | ExtremeSwitching X670-G2 | 30,000 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 45,000 |
| Multicast listener discovery (MLD)v2 subscribers—maximum number of MLDv2 subscribers per port.[n] | ExtremeSwitching X670-G2, X460-G2, X450-G2 | 4,000 |
| | ExtremeSwitching X620, X440-G2 | 3,500 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 4,000 |
| Multicast listener discovery (MLD)v2 subscribers—maximum number of MLDv2 subscribers per switch.[n] | ExtremeSwitching X670-G2 | 30,000 |
| | ExtremeSwitching X460-G2, X450-G2, X620, X440-G2 | 10,000 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 45,000 |
| Multicast listener discovery (MLD)v2 maximum source per group—maximum number of source addresses per group. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 200 |
| Multicast listener discovery (MLD) SSM-map entries—maximum number of MLD SSM mapping entries. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695 | 500 |
| | ExtremeSwitching X440-G2, X620 | 50 |
| Multicast listener discovery (MLD) SSM-MAP entries—maximum number of sources per group in MLD SSM mapping entries. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 50 |
| Network Login—maximum number of clients being authenticated on MAC-based VLAN enabled ports. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 1,024 |
| Network Login—maximum number of clients being authenticated with policy mode enabled with TCI overwrite enabled. | ExtremeSwitching X450-G2, X460-G2, X590, X465 | 1,024 |
| | ExtremeSwitching X670-G2, X870, X690, X695 | 512 |
| | ExtremeSwitching X620, X440-G2 | 256 |
| Network Login—maximum number of dynamic VLANs. | ExtremeSwitching X460-G2, X450-G2, X670-G2, X870, X690, X590, X465, X695 | 2,000 |
| | ExtremeSwitching X440-G2, X620 | 1,024 |

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

| Metric | Product | Limit |
|---|---|---|
| Network Login VLAN VSAs—maximum number of VLANs a client can be authenticated on at any given time. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 10 |
| Network Service Identifiers (NSI)/ VLAN mappings—maximum number of VLANs to NSI mappings. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 94 |
| Node Alias—maximum number of entries per slot. | ExtremeSwitching X450-G2, X460-G2, X670-G2 X620, X440-G2, X870, X690, X590, X465, X695 | 8,192 |
| ONEPolicy Roles/Profiles—maximum number of policy roles/ profiles. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 63 |
| ONEPolicy Rules per Role/Profile—maximum number of rules per role/policy. | ExtremeSwitching X450-G2, X460-G2 | IPv6 rules: 256<br>IPv4 rules: 256<br>L2 Rules: 184<br>MAC Rules: 256 |
| | ExtremeSwitching X670-G2, X870 | IPv6 Rules: 256<br>L2 Rules: 184<br>MAC Rules: 256<br>IPv4 Rules: 256 |
| | ExtremeSwitching X620, X440-G2 | IPv6 and Mac Rules: 0<br>Ipv4 Rules: 256 (per switch)<br>L2 Rules: 184 (per switch) |
| | ExtremeSwitching X465, X690, X590, X695 | IPv4 Rules: 512<br>IPv6 Rules: 512<br>MAC Rules: 512<br>L2 Rules: 440 |
| ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per switch only with TCI-Overwrite enabled. | ExtremeSwitching X450-G2, X460-G2, X590, X465 | 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 |
|---|---|---|
| ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per switch with TCI-Overwrite disabled.<br><br>Note: The maximum values assume 75% utilization of VLAN-XLATE hash table. | ExtremeSwitching X690, X590, X465 | 24,576 |
| | ExtremeSwitching X670-G2, X460-G2, X870, X695 | 12,288 |
| | ExtremeSwitching X450-G2 | 6,144 |
| | ExtremeSwitching X620, X440-G2 | 1,536 |
| | Stacking | 1,536–65,534 |
| ONEPolicy Authenticated Users per Port per Switch— maximum number of authenticated users per port per switch with TCI overwrite disabled.<br><br>Note: The maximum values assume 75% utilization of VLAN-XLATE hash table. | ExtremeSwitching X450-G2 | 6,144 |
| | ExtremeSwitching X460-G2, X670-G2, X870, X695 | 12,288 |
| | ExtremeSwitching X690, X590, X465 | 24,576 |
| | ExtremeSwitching X440-G2, X620 | 1,536 |
| ONEPolicy Authenticated Users per Port per Switch— maximum number of authenticated users per port with only with TCI-Overwrite enabled. | ExtremeSwitching X450-G2, X460-G2, X590, X465 | 1,024 |
| | ExtremeSwitching X670-G2, X870, X690, X695 | 512 |
| | ExtremeSwitching X620, X440-G2 | 256 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—total maximum number of unique permit/deny traffic classification rules types (system/stack). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870 | 952 |
| | ExtremeSwitching X620, X440-G2 | 440 |
| | ExtremeSwitching X690, X590, X465, X695 | 1,976 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870 | 256 |
| | ExtremeSwitching X620, X440-G2 | N/A |
| | ExtremeSwitching X690, X590, X465, X695 | 512 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870 | 256 |
| | ExtremeSwitching X620, X440-G2 | N/A |
| | ExtremeSwitching X690, X590, X465, X695 | 512 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870 | 256 |
| | ExtremeSwitching X690, X590, X465, X695 | 512 |

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

| Metric | Product | Limit |
|---|---|---|
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870 | 184 |
| | ExtremeSwitching X620, X440-G2 | 184 |
| | ExtremeSwitching X690, X590, X465, X695 | 440 |
| Policy-based routing (PBR) redundancy—maximum number of flow-redirects. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465 , X695 | 256 [O] |
| Policy-based routing (PBR) redundancy—maximum number of next hops per each flow-direct. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695 | 32 [O] |
| Private VLANs—maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN. | ExtremeSwitching X670-G2 | 63 |
| | ExtremeSwitching X460-G2 | 53 |
| | ExtremeSwitching X450-G2 | 51 |
| | ExtremeSwitching X440-G2 | 47 |
| | ExtremeSwitching X620 | 15 |
| | ExtremeSwitching X870 | 127 |
| | ExtremeSwitching X690, X695 | 71 |
| | ExtremeSwitching X590, X465 | 31 |
| Private VLANs—maximum number of private VLANs with an IP address on the network VLAN.<br><br>Note: This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695 | 1,024 |
| | ExtremeSwitching X450-G2 | 510 |
| | ExtremeSwitching X440-G2 | 255 |
| | ExtremeSwitching X620 | 510 |
| Private VLANs—maximum number of private VLANs in an L2-only environment. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695 | 1,280 |
| | ExtremeSwitching X450-G2 | 597 |
| | ExtremeSwitching X440-G2, X620 | 255 |
| PTP/1588v2 Clock Ports | ExtremeSwitching X460-G2, X670-G2 | 32 for boundary clock<br>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:<br>• Transparent clock + ordinary clock<br>• Transparent clock + boundary clock |
| | 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 |
| Route policies—suggested maximum number of lines in a route policy file. | ExtremeSwitching X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 10,000 |
| RIP Learned Routes—maximum number of RIP routes supported without aggregation. | ExtremeSwitching X670-G2, X460-G2, X440-G2, X620, X870, X690, X590 , X465 , X695 | 10,000 |
| RIP interfaces on a single router—recommended maximum number of RIP routed interfaces on a switch. | ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590 , X465, X695 | 256 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| RIPng learned routes—maximum number of RIPng routes. | ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590 , X465, X695 | 3,000 |
| | ExtremeSwitching X440-G2, X620 | N/A |
| Spanning Tree (maximum STPDs)—maximum number of Spanning Tree Domains on port mode EMISTP. | ExtremeSwitching X450-G2, X670-G2, X460-G2, X620, X870, X690, X590 , X465, X695 | 64 |
| | ExtremeSwitching X440-G2 | 32 |

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

| Metric | Product | Limit |
|---|---|---|
| Spanning Tree PVST+—maximum number of port mode PVST domains.<br><br>Note: For all platforms, the maximum number of active ports per PVST domain depends on the maximum number of spanning tree ports supported on given platform. For example, 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<br><br>ExtremeSwitching X460-G2, X450-G2, X440-G2<br><br>ExtremeSwitching X870, X690, X590 , X465, X695 | 256<br><br>128<br><br>384 |
| Spanning Tree—maximum number of multiple spanning tree instances (MSTI) domains. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590 , X465, X695<br><br>ExtremeSwitching X440-G2 | 64<br><br>32 |
| Spanning Tree—maximum number of VLANs per MSTI.<br><br>Note: Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI. | ExtremeSwitching X670-G2<br><br>ExtremeSwitching X460-G2, X450-G2, X620, X870, X690, X590 , X465, X695<br><br>ExtremeSwitching X440-G2 | 500<br><br>600<br><br>256 |
| Spanning Tree—maximum number of VLANs on all MSTP instances. | ExtremeSwitching X670-G2, X460-G2, X450-G2, X620, X870, X690, X590 , X465, X695<br><br>ExtremeSwitching X440-G2 | 1,024<br><br>512 |
| Spanning Tree (802.1d domains)—maximum number of 802.1d domains per port. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695 | 1 |
| Spanning Tree (number of ports)—maximum number of ports including all Spanning Tree domains. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X440-G2 | 4,096<br><br>2,048 |
| Spanning Tree (maximum VLANs)—maximum number of STP-protected VLANs (dot1d and dot1w). | ExtremeSwitching X670-G2, X460-G2, X450-G2, X620, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X440-G2 | 1,024<br><br>600 |
| SSH (number of sessions)—maximum number of simultaneous SSH sessions. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 8 |
| Static MAC multicast FDB entries—maximum number of permanent multicast MAC entries configured into the FDB. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 1,024 |

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

| Metric | Product | Limit |
|---|---|---|
| Syslog servers—maximum number of simultaneous Syslog servers that are supported. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 16 |
| Syslog targets—maximum number of configurable Syslog targets. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 16 |
| Telnet (number of sessions)—maximum number of simultaneous Telnet sessions. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 8 |
| Virtual routers—maximum number of user-created virtual routers that can be created on a switch. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590 , X465, X695<br>ExtremeSwitching X440-G2, X620 | 63<br>16 (local-only VRs) |
| Virtual router forwarding (VRFs)—maximum number of VRFs that can be created on a switch.<br>Note: * Subject to other system limitations. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590 , X465, X695<br>ExtremeSwitching X440-G2, X620 | 960 *<br>16 (local-only VRFs) |
| Virtual router protocols per VR—maximum number of routing protocols per VR. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695<br>ExtremeSwitching X440-G2, X620 | 8<br>N/A |
| Virtual router protocols per switch—maximum number of VR protocols per switch. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695<br>ExtremeSwitching X440-G2, X620 | 64<br>N/A |
| VLAN aggregation—maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 1,000 |
| VLANs—includes all VLANs.<br>Note: 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 |
| VLANs (Layer 2)—maximum number of Layer 2 VLANs. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465, X695 | 4,094 |
| VLANs (Layer 3)—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695<br>ExtremeSwitching X440-G2, X620 | 2,048<br>510 |

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

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

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

| Metric | Product | Limit |
|---|---|---|
| XML requests—maximum number of XML requests per second.<br><br>Note: 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 |
| XNV authentication—maximum number of VMs that can be processed (combination of local and network VMs). | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X450-G2, X440-G2, X620 | 2,048<br><br>1,024 |
| XNV database entries—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 |
| XNV database entries—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 |
| XNV dynamic VLAN—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 |
| XNV local VPPs—maximum number of XNV local VPPs. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 2,048 ingress<br>512 egress |
| XNV policies/dynamic ACLs—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<br>4 egress |
| XNV network VPPs—maximum number of XNV network VPPs.[p] | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 2,048 ingress<br>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 |
|---|---|---|
| BGP auto-peering—maximum number of auto-peering nodes and VTEPs. | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 64 |
| BGP auto-peering attached IPv4 hosts— maximum number of attached IPv4 hosts. | ExtremeSwitching X670-G2<br><br>ExtremeSwitching X870, X690, X590, X465, X695 | 16,000<br><br>64,000 |

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

| Metric | Product | Limit |
|---|---|---|
| BGP auto-peering attached IPv6 hosts— maximum number of attached IPv6 hosts. | ExtremeSwitching X670-G2 | 254 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 8,000 |
| BGP auto-peering ECMP—maximum number of equal cost multipath for auto-peering.<br><br>Note: * Subject to the limitation imposed by the number of physical ports on a switch. | ExtremeSwitching X670-G2, ExtremeSwitching X690, X870, X590, X465, X695 | 16* |
| BGP auto-peering maximum IPv4 prefixes with ECMP—Maximum number of IPv4 Network prefixes with ECMP. | ExtremeSwitching X670-G2, ExtremeSwitching X690, X870, X590, X465, X695 | 64,000 |
| BGP auto-peering maximum IPv6 prefixes with ECMP—Maximum number of IPv6 Network prefixes with ECMP. | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 8,000 |
| BGP auto-peering MLAG peers—maximum MLAG peers per AutoBGP node. | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 1 |
| BGP auto-peering VRFs—maximum number of VRFs. | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 64 |
| BGP auto-peering EVPN instances—maximum EVPN instances. | ExtremeSwitching X670-G2, X690, X870, X590, X465, X695 | 1,024 |
| EAPS domains—maximum number of EAPS domains.<br><br>Note: 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 |
| EAPSv2 protected VLANs—maximum number of protected VLANs. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X440-G2, X620 | 500 |
| | ExtremeSwitching X870, X690, X590, X465, X695 | 2,000 |
| ERPS domains—maximum number of ERPS domains without CFM configured. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 32 |
| ERPS domains—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 |
|---|---|---|
| OSPFv2 interfaces—recommended maximum number of OSPF interfaces on a switch (active interfaces only). | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 4 |
| OSPFv2 links—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 |
| OSPFv2 neighbors—maximum number of supported OSPF adjacencies. | ExtremeSwitching X450-G2, X670-G2, X460-G2, X440-G2, X620, X870, X690, X590, X465, X695 | 4 |
| OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area. | ExtremeSwitching X870, X690, X590, X465, X695 | 100 |
| | ExtremeSwitching X670-G2, X460-G2 | 50 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| OSPFv2 virtual links—maximum number of supported OSPF virtual links. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 32 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| OSPFv3 areas—as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching X870, X690, X590, X465, X695 | 100 |
| | ExtremeSwitching X460-G2, X670-G2 | 16 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 4 |
| OSPFv3 external routes—recommended maximum number of external routes. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695 | 10,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 1,200 |
| OSPFv3 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes. | ExtremeSwitching X870, X690, X590, X465, X695 | 4.000 |
| | ExtremeSwitching X670-G2, X460-G2 | 3,000 |
| | ExtremeSwitching X450-G2, X440-G2, X620 | 500 |
| OSPFv3 interfaces—maximum number of OSPFv3 interfaces (active interfaces only). | ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X440-G2, X620, X590, X465, X695 | 4 |
| OSPFv3 neighbors—maximum number of OSPFv3 neighbors. | ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X440-G2, X620, X590, X465, X695 | 4 |
| OSPFv3 virtual links—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 |
| PIM IPv4 (maximum interfaces)—maximum number of PIM active interfaces. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X440-G2, X620, X690, X590, X465, X695 | 4 |

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

| Metric | Product | Limit |
|---|---|---|
| PIM IPv4 Limits—maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 180 |
| PIM IPv4 Limits—maximum number of multicast groups per static rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 3,000 (depends on policy file limits) |
| PIM IPv4 Limits—maximum number of multicast sources per group. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590 , X465, X695<br>ExtremeSwitching X440-G2, X620 | 5,000<br>1,500 |
| PIM IPv4 Limits—maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465 , X695 | 145 |
| PIM IPv4 Limits—static rendezvous points. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465 , X695 | 32 |
| PIM IPv6 (maximum interfaces)—maximum number of PIM active interfaces. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X440-G2, X620, X690, X590 , X465, X695 | 4 |
| PIM IPv6 Limits—maximum number of multicast sources per group. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590 , X465, X695<br>ExtremeSwitching X450-G2<br>ExtremeSwitching X440-G2, X620 | 1,750<br>1,500<br>550 |
| PIM IPv6 Limits—maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 70 |
| PIM IPv6 Limits—maximum number of multicast groups per static rendezvous point. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 3,000 (depends on policy file limits) |
| PIM IPv6 Limits—maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465 , X695 | 64 |
| PIM IPv6 Limits—maximum number of secondary addresses per interface. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465 , X695 | 70 |
| PIM IPv6 Limits—static rendezvous points. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590 , X465 , X695 | 32 |
| Port-specific VLAN tags—maximum number of port-specific VLAN tags. | ExtremeSwitching X460-G2, X670-G2, X770, X870, X690, X590 , X465, X695<br>ExtremeSwitching X450-G2, X440-G2, X620 | 1,023<br>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.<br><br>Note: These limits are applicable for Fabric Routing configuration also.<br><br>Note: Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type. | Normal Mode (as individual VRs): | |
| | ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695 | 511 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| | Scaled Mode (with groups): | |
| | 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)<br><br>Note: These limits are applicable for Fabric Routing configuration also.<br><br>Note: Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type. | Normal Mode (as individual VRs): | |
| | ExtremeSwitching X670-G2, X460-G2, X450-G2, X870, X690, X590, X465, X695 | 511 |
| | ExtremeSwitching X440-G2, X620 | 128 |
| | Scaled Mode (with groups): | |
| | 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<br><br>Note: With Advanced Edge license or higher. | 255 |
| VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN)—maximum number of VRIDs per VLAN. | ExtremeSwitching X670-G2, X460-G2, X450-G2 X440-G2, X620, X870, X690, X590, X465, X695<br><br>Note: With Advanced Edge license or higher. | 255 |
| VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks)—maximum number of ping tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695<br><br>Note: With Advanced Edge license or higher. | 8 |

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

| Metric | Product | Limit |
|---|---|---|
| VRRP (maximum ping tracks)—maximum number of ping tracks per VRRP Instance under 128 VRRP instances, with Advanced Edge license or higher. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 8 (20 centisecond or 1 second hello interval) |
| VRRP (v3-IPv6) (maximum ping tracks)—maximum number of ping tracks per VRRP Instance under 128 VRRP instances, with Advanced Edge license or higher. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 8 (20 centisecond or 1 second hello interval) |
| VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks)—maximum number of IP route tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 8 |
| VRRP (v2/v3-IPv4/IPv6)—maximum number of VLAN tracks per VLAN. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X620, X440-G2, X870, X690, X590, X465, X695 | 8 |
| VXLAN—maximum virtual networks.<br><br>Note: Every VPLS instance/PSTag VLAN reduces this limit by 1.<br><br>Note: Assumption is all BUM (broadcast/unknown-unicast/multicast) FDB entries are pointing to the same set of RTEPs when all VNETs use explicit flooding. Depends on whether all VNETs use standard or explicit and the number of tenant VLAN ports. | ExtremeSwitching X670-G2, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | 2,048–4,000<br><br>N/A |
| VXLAN—maximum tenant VLANs plus port combinations<br><br>Note: Every (VPLS/PSTag VLAN) + port reduces the limit by 1. | ExtremeSwitching X670-G2, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | 4,096<br><br>N/A |
| VXLAN—maximum static MAC to IP bindings.<br><br>Note: Every FDB entry configured reduces this limit by 1. | ExtremeSwitching X670-G2, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | 64,000<br><br>N/A |
| VXLAN—maximum RTEP IP addresses | ExtremeSwitching X670-G2, X870, X690, X590, X465, X695<br><br>ExtremeSwitching X460-G2, X450-G2, X440-G2, X620 | 512<br><br>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.<br>Note: With default keepalive and hold timers.<br>Note: Each BGPv4/BGPv6 peer handles a maximum of 50 routes.<br>Note: 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 |
|---|---|---|
| BGP (unicast address-family routes)—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 |
| BGP (non-unique routes)—maximum number of non-unique BGP routes. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 25,000 |
| | ExtremeSwitching X450-G2 | 20,000 |
| BGP ECMP—maximum number of equal cost paths per multipath for BGP and BGPv6. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 2, 4, 8, 16, 32, or 64 |
| | ExtremeSwitching X450-G2 | 64 |
| BGPv6 (unicast address-family routes)—maximum number of unicast address family routes. | ExtremeSwitching X460-G2 | 6,000 |
| | ExtremeSwitching 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 |
| BGPv6 (non-unique routes)—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 |
| EVPN EVI instances—maximum number of EVI instances. | ExtremeSwitching X670-G2, X870, X690, X590, X465, X695 | 1,024 |
| EVPN LAGs—maximum number of LAGs. | ExtremeSwitching X670-G2, X870, X690, X590, X465, X695 | 128 |
| GRE Tunnels—maximum number of GRE tunnels. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465 , X695 | 255 |
| | ExtremeSwitching X620, X440G2 | N/A |
| IS-IS adjacencies—maximum number of supported IS-IS adjacencies. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 128 |
| | ExtremeSwitching X450-G2 | N/A |
| IS-IS ECMP—maximum number of equal cost paths per multipath for IS-IS. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 2, 4, or 8 |
| | ExtremeSwitching X450-G2 | N/A |
| IS-IS interfaces—maximum number of interfaces that can support IS-IS. | ExtremeSwitching X460-G2, X670-G2, X770, X870, X690, X590, X465, X695 | 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/I2 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 |
|---|---|---|
| IS-IS IPv4/IPv6 L1 routes in an L1/L2 router—recommended maximum number of IS-IS Level 1 routes in a Level 1/Level2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 20,000 |
| | ExtremeSwitching X450-G2 | N/A |
| MSDP active peers—maximum number of active MSDP peers. | ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695 | 64 |
| MSDP SA cache entries—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 |
| MSDP maximum mesh groups—maximum number of MSDP mesh groups. | ExtremeSwitching X450-G2, X670-G2, X460-G2, X870, X690, X590, X465, X695 | 16 |
| OSPFv2/v3 ECMP—maximum number of equal cost multipath OSPFv2 and OSPFv3. | ExtremeSwitching X460-G2, X670-G2, X450-G2, X870, X690, X590, X465, X695 | 64 |
| OSPFv2 areas—as an ABR, how many OSPF areas are supported within the same switch. | ExtremeSwitching X450-G2, X460-G2, X670-G2, X870, X690, X590, X465, X695 | 8 |
| OSPFv2 external routes—recommended maximum number of external routes contained in an OSPF LSDB. | ExtremeSwitching X870, X690, X590, X465, X695 | 10,000 |
| | ExtremeSwitching X670-G2, X460-G2 | 5,000 |
| | ExtremeSwitching X450-G2 | 4,000 |
| OSPFv2 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain. | ExtremeSwitching X870, X690, X590, X465, X695 | 4,000 |
| | ExtremeSwitching X670-G2, X460-G2 | 2,000 |
| | ExtremeSwitching X450-G2 | 1,600 |
| OSPFv2 interfaces—recommended maximum number of OSPF interfaces on a switch (active interfaces only). | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 400 |
| | ExtremeSwitching X450-G2 | 320 |
| OSPFv2 links—maximum number of links in the router LSA. | ExtremeSwitching X460-G2, X670-G2, X870, X690, X590, X465, X695 | 400 |
| | ExtremeSwitching X450-G2 | 320 |
| OSPFv2 neighbors—maximum number of supported OSPF adjacencies. | ExtremeSwitching X670-G2, X460-G2, X870, X690, X590, X465, X695 | 128 |
| | ExtremeSwitching X450-G2 | 96 |

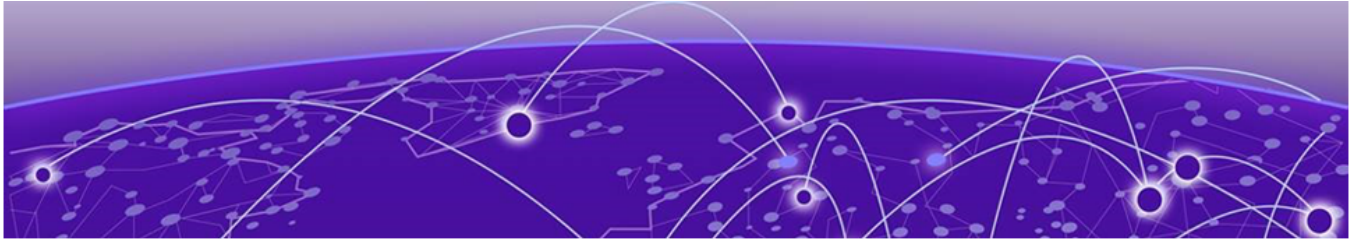
**Table 14: Supported Limits for Core License (continued)**

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

[a] The table shows the total available. When installing ACL rules bound to a set of ports, rules are replicated for each port if there are ACL counters and counter compression is not enabled, or if the ports are Extended Edge Switching extended ports.
[c] When there are BFD sessions with minimal timer, sessions with default timer should not be used.
[f] Effective capacity varies based on actual MAC addresses and VLAN IDs used and hash algorithm selected.
[g] Based on "configure forwarding internal-tables more l2".
[h] Based on "configure forwarding internal-tables more l3-and-ipmc".
[j] The limit depends on setting configured with configure iproute reserved-entries.
[m] The IPv4 and IPv6 multicast entries share the same hardware tables, so the effective number of IPv6 multicast entries depends on the number of IPv4 multicast entries present and vice versa.
[n] If IGMP and MLD are simultaneously configured on the switch, the number of effective subscribers supported are lessened accordingly.
[o] The total of all PBR next hops on all flow redirects should not exceed 4,096.
[p] The number of XNV authentications supported based on system ACL limitations.
[q] Based on "configure forwarding internal-tables more routes".
[r] Based on `configure forwarding internal-tables more routes ipv6-mask-length 128`.



# Open Issues, Known Behaviors, and Resolved Issues



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

## Open Issues

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: `delete mlag peer SYS_EASYLAG_OFF`. |
| 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. Workaround: 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 `debug hal show ipv4Intf \| include "L3 Interfaces"`. |
| ExtremeSwitching X670-G2 Series Switches | |

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

| Defect Number | Description |
|---|---|
| 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. |
| EXOS-26729 | 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:<br>`<Warn:BGP.UpdateMgr.RtNotAdvertLargeUpdtMsg> A route cannot be advertised because it is too large to fit into the maximum allowed size of a BGP UPDATE message. VR = <vr number> Destination address AFI/ SAFI = 4587545 Destination address prefix =<7 32 bit Hex strings forming the BGP route prefix> Destination address prefix length = 216`<br>Workaround: Do not configure a LAG port on more than:<br>• With EVPN and BGP Auto-peering enabled: 75 VLANs<br>• With EVPN and static BGP configuration: 120 VLANs<br>Alternatively, you can avoid these limits using a static port share that does not specify the LACP protocol.<br>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. |
| FDB | |
| EXOS-26648 | When you configure an explicit time using the `configure time` command, it might cause the switch to experience traffic loss or perform software forwarding instead of hardware forwarding.<br>Workaround: Save, and then reboot, the switch. |
| VXLAN | |
| EXOS-20311 | When changing RTEP tenant VLAN IP address, error messages occur. |

## Known Behaviors

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

## Resolved Issues in ExtremeXOS 30.7.2-Patch1-20

The following issues were resolved in ExtremeXOS 30.7.2-Patch1-20. ExtremeXOS 30.7.2-Patch1-20 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 30.7.2-Patch1-20**

| Defect | Description |
|---|---|
| General | |
| EXOS-28558 | Multicast traffic loss seen in VPEX setup after a reboot of an extended slot. |
| EXOS-28737 | IPv6 Neighbor discovery fails intermittently on MLAG peer. |
| EXOS-28891 | When the "Extreme Entrasys entity sensor MIB" is polled, incorrect Tx/Rx power threshold values are returned. |
| EXOS-29106 | Default route shows "Unfeasible" flag after IBGP adjacency flap of peer switch when multipath is configured. |
| EXOS-29134 | VPEX ring not detected due to missing ECID in extended slot after a reboot of the controlling bridge. |
| EXOS-29208 | The switch does not skip the lines starting with "#" in the `.lst` files. |
| EXOS-29235 | cliMaster process consumes high CPU after disabling BFD and terminating the SSH session running BFD statistics. |
| EXOS-29283 | Multicast traffic duplication observed in VPEX-MLAG setup after link flap of ports in VPLAG. |
| EXOS-29284 | L2 traffic gets flooded in MLAG due to a miss in FDB checkpointing between MLAG peers. |
| EXOS-29298 | Multicast traffic loss seen in VPEX setup after a reboot of an extended slot. |
| EXOS-29308 | Egress vlan statistics is not fetching counters for port numbers greater than 64. |
| EXOS-29379 | BGP flag is not set correctly in the IPv6 BGP table after flapping the port on the peer switch. |
| EXOS-29380 | VPEX ring stuck in Severed state after BPE reboot due to LACP aggregation failure on the cascade port. |
| EXOS-29418 | Traffic destined to the subnet IP is broadcast on all the ports present in the destination VLAN. |
| ExtremeSwitching X465 | |
| EXOS-29381 | Perpetual PoE does not work with Igor PD. |
| ExtremeSwitching X695 | |
| EXOS-29295 | When optics.xmod is installed on an ExtremeSwitching X695 series switch, an error message is displayed due to a particular missing file. |
| SummitStack | |
| EXOS-27666 | In a SummitStack, all of the FAN serial numbers are not shown under the **`show fan`** command. |
| EXOS-29179 | The **`show fan`** command output is not aligned when executed in a backup node. |

**Table 16: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.2-Patch1-20 (continued)**

| Defect | Description |
|---|---|
| EXOS-29181 | Slot reboot is occurs when a fan is removed from the SummitStack. |
| EXOS-29182 | In SummitStacks, there needs to be support for the active monitoring of fan status/failures. |
| EXOS-29259 | The backup slot is never in sync when the diagnostics command is started on a stack port during slot reboot. |

## Resolved Issues in ExtremeXOS 30.7.2

The following issues were resolved in ExtremeXOS 30.7.2. ExtremeXOS 30.7.2 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 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.2**

| Defect | Description |
|---|---|
| General | |
| EXOS-28538 | With MVRP enabled on LAG ports, MRP process ends unexpectedly when executing the **`show mvrp tag`** command. |
| EXOS-28672 | VPEX rings found stuck in 'Formation-disabled' after rebooting BPEs. |
| EXOS-28678 | Redundant port configured through SRP fails to link up after rebooting peer devices. |
| EXOS-28697 | STP process crash observed when configuring auto-edge. |
| EXOS-28706 | The user is required to add the port manually to a VLAN where it is alreadyadded by the netlogin process. |
| EXOS-28708 | Unable to configure an IPv6 address with VLAN tag instead of VLAN name. |
| EXOS-28731 | Disable/enable of MACSec on one port causes traffic loss on another port. |
| EXOS-28774 | GRE Tunnel flag not updated properly for some routes, causing them to not get installed in HAL. |
| EXOS-28804 | BGP neighbors running on VR type vpn-vrf or vrf are not getting established. |
| EXOS-28839 | The default timezone configuration is not present in **`show configuration detail`**, resulting in customers being unable to revert any timezone configuration to its default value. |

**Table 17: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.2 (continued)**

| Defect | Description |
|---|---|
| EXOS-28857 | Incorrect routes for a single prefix are installed in HAL due to direct route and BGP route being treated as an ECMP route during route compression. |
| EXOS-28864 | The Syscontact and SysLocation values cannot be negated once configured. |
| EXOS-28872 | Port flap observed when configuring auto 'on' for the first time after a switch reboot. |
| EXOS-29009 | Switch response for REST query takes several minutes when the switch has scaled configuration of VLAN. |
| EXOS-29016 | When adding a node in a stack, a nodealias process signal 11 crash is observed. |
| ExtremeSwitching X435 | |
| EXOS-28882 | The default VR name is not showing in syslog configuration. |

## Resolved Issues in ExtremeXOS 30.7.1-Patch1-103

The following issues were resolved in ExtremeXOS 30.7.1-Patch1-103. ExtremeXOS 30.7.1-Patch1-103 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 18: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-103**

| Defect | Description |
|---|---|
| General | |
| EXOS-28366 | Set the default VPEX IPMC replication mode to *`controlling-bridge`*. |
| EXOS-28146 | The "Save configuration" button does not work in the Chalet web application. |
| EXOS-28230 | Unable to disable the port that was already disabled by STP by running **`bpdu-restrict`**. |
| EXOS-28192 | HAL process ends unexpectedly when there is frequent link flap in the Software Redundant Port (SRP). |
| EXOS-28293 | OnePolicy access-list is not accepted if the name starts with a number. |
| EXOS-27960 | The Inter Switch Communication (ISC) port is removed from the Fabric Attach (FA) VLANs when the dynamic FA assignment is deleted. |

**Table 18: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-103 (continued)**

| Defect | Description |
|---|---|
| EXOS-27961 | RTMGR process crashed with signal 11 while routes are deleted/added on **`disable/enable ospf`** on peer switch. |
| EXOS-27110 | Kernel crash observed when IP defragmentation fails. |
| EXOS-28023 | Internal sever error observed in VPEX switch when fetching component details through *`openconfig`*. |
| EXOS-27963 | Long delay for directly attached BGP Neighbors to come into established state after reboot. |
| EXOS-28086 | L2VLAN DHCP packets are forwarded by the switch when discover packets are received on subvlan and L2VLAN at the same time. |
| EXOS-27853 | Memory depleted at the kernel level due to bootprelay packet processing. |
| EXOS-28310 | Routes redistribution from OSPF to RIP creates issues when removing NLRI from Routing Policy. |
| SummitStack | |
| EXOS-28204 | Short loop observed in the sharing link when performing a node failover in the stack. |
| EXOS-28224 | With a newly formed stack, LLDP is disabled for all the slot ports except the primary slot. |
| EXOS-28043 | HAL process spikes more than 50% when backup slot is powered down. |

## Resolved Issues in ExtremeXOS 30.7.1-Patch1-86

The following issues were resolved in ExtremeXOS 30.7.1-Patch1-86. ExtremeXOS 30.7.1-Patch1-86 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 19: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-86**

| Defect | Description |
|---|---|
| General | |
| EXOS-27856 | Adds support for `disable/enable iqagent`. |
| EXOS-27857 | `disable iqagent` configuration is not reflected in `show configuration` output. |
| EXOS-27564 | When configuring LAG on extended ports, short loop is detected in switch. |

**Table 19: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-86 (continued)**

| Defect | Description |
|---|---|
| EXOS-27919 | In VPEX one armed MLAG ring topology, multicast traffic drop observed after link flap of native cascade port in controlling bridge. |
| EXOS-27855 | Irrelevant log messages from VLAN module <Info:vlan.mac.gMacArrayDump> is seen after switch reboot. |
| EXOS-27928 | MLAG up/down messages are not displayed by default in log. |
| EXOS-27998 | Identity-management entries were not removed after running `clear netlogin state port`. |
| EXOS-27215 | When the mgmt port is down with IQAgent, `enable dhcp vlan mgmt` log message prints every 2 minutes. |
| EXOS-26928 | DHCP broadcast packets are flooded through the client port in non-policy netlogin mode when broadcast flooding is disabled on ports. |
| EXOS-27867 | Update `show fdb` output to mention Age displayed as 0 for hardware aging platforms. |
| EXOS-27704 | EXSH process crashed with signal 6 on issuing double TAB after alias name. |
| EXOS-27603 | Non-partitioned 40G ports in backup/standby slots are showing incorrect port status after stack reboots. |
| EXOS-27719 | After running `port statistics`-related commands, the CLI stops responding. |
| EXOS-19439 | Error message "Failed to set fec config" observed during switch reboot or stack failover with 4x10G partition configuration. |
| EXOS-27810 | VPEX topology shows Severed state when powering on/off all BPEs at the same time. |
| EXOS-27742 | When disabling one of the ring ports and rebooting an extended slot in VPEX ring, all ports in extended slots remain in 'Ready' state. |
| EXOS-27469 | In VPEX MLAG topology, the nodealias process ends unexpectedly when SNMP polling was run to fetch nodealias information from extended slots. |
| EXOS-27971 | ICMP packets are not egressing after failover. |
| EXOS-27883 | CLI process consumes more CPU when `enable debug-mode` command is executed and the session gets timed out. |
| EXOS-27508 | Authentication for local user fails for SSH connection. Radius server is unreachable. |
| EXOS-27373 | HAL error message seen when changing auto-polarity on a port. |
| EXOS-27578 | DHCP/BOOTP relay packets forwarded to the wrong VLAN, causing connectivity issues for PXE client. |
| EXOS-27477 | STP PDU not sent out immediately on `Admin enable` operation if edge port is configured with edge safeguard and BPDU restrict is enabled. |
| EXOS-27957 | RTMGR process crashed with signal 6 due to stale BGP entries. |
| EXOS-27716 | ELRP process ends unexpectedly after receiving an invalid packet with ELRP destination MAC address. |

**Table 19: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-86 (continued)**

| Defect | Description |
|---|---|
| EXOS-27557 | `show fabric attach elements` output does not display all attached elements if the number of elements is greater than 25. |
| ExtremeSwitching X460-G2 Series Switches | |
| EXOS-27661 | Two-Way Active Measurement Protocol (TWAMP) feature is not working as expected. |
| EXOS-27745 | PTPv2 mean path delay metric is not displayed correctly. |
| EXOS-27668 | High HAL utilization observed with Network Timing license. |
| ExtremeSwitching X770 Series Switches | |
| EXOS-27828 | On upgrade to 22.7 and later releases, thttpd and related processes are stuck in the load configuration state if there is an excess amount of VLAN configuration. |
| SummitStack | |
| EXOS-27999 | ZTPstack cannot successfully configure a new switch to join the stack if the currently active Stack MAC address is based on the node that is not currently present in stack. |

## Resolved Issues in ExtremeXOS 30.7.1-Patch1-54

The following issues were resolved in ExtremeXOS 30.7.1-Patch1-54. ExtremeXOS 30.7.1-Patch1-54 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 20: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-54**

| Defect | Description |
|---|---|
| General | |
| EXOS-27157 | HAL process ends unexpectedly on master node of SummitStack if stacking-related show commands are run when some other stacking slot is being unconfigured. |
| EXOS-26783 | The command `disable stpd s0` appears twice in the configuration if STP is disabled and if the default ST[D mode of s0 domain is changed. |

**Table 20: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-54 (continued)**

| Defect | Description |
|---|---|
| EXOS-27088 | SSH does not work with weaker public key-algorithm ssh-dss. |
| EXOS-27541 | The process exsshd might end unexpectedly when closing an SSH connection. |
| EXOS-27202 | ExtremeXOS adds a prefix of csr- to the common name in the Certificate Sign Request (CSR). |
| EXOS-27226 | During VPLS fallback scenario, convergence happens within a second, which causes communication loss between CE devices. |
| EXOS-27341 | If a non-tenant VMAN is added to the same port as CEP, then you are not able to ping the tenant VLAN IP on a VTEP. |
| EXOS-27285 | Default-originate routes stop being transmitted over BGP/OSPF when BGP redistribute cost is high. |
| EXOS-26378 | FDB is not learned on network VLANS when L2VPN sharing is not enabled on PE switches. |
| EXOS-27152 | When there are flaps on MPLS cloud, VPLS FDB is leaked on network VLAN. |
| EXOS-27068 | After a reboot, switch fails to load VLAN configuration on a port with remote mirroring configured. |
| EXOS-27044 | Invalid entity warnings appear in log after ExtremeCloud request. |
| EXOS-27427 | JSON request for a configuration change or save (admin privilege) fails for RADIUS-authenticated users. |
| EXOS-26430 | Fabric Attach uplink is not added/removed in static/dynamic VLAN based on NSI status. |
| EXOS-27390 | Installation of ACL rule entries containing multiple conditions of the same match type should be blocked. |
| EXOS-27041 | TTL match condition is not updated during ACL smart refresh. |
| EXOS-27258 | The `show configuration difference` command output incorrectly shows differences when the booted and the running configuration are identical. |
| EXOS-27268 | On Extended Edge Switching topologies, pibAsicUpdOneDot1brPortEgressReplication' error messages appear when upgrading to ExtremeXOS 30.7. |
| EXOS-27126 | VPEX process ends unexpectedly after unconfiguring and reconfiguring the extended slot (V300). |
| EXOS-27169 | If switch is configured with slot:port notation, cable diagnostic script returns errors. |
| EXOS-27011 | The process cliMaster ends unexpectedly when any show command is run with grep option and log target session is enabled. |
| EXOS-27098 | In the output of the `show stpd` command, the operational edge status is not set to "true" for ports linked up at non-default speeds, such as 100M or 10M. |
| EXOS-27006 | Nettools process ends unexpectedly when receiving DHCP packets with invalid DNS (0.0.0.0). |

**Table 20: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-54 (continued)**

| Defect | Description |
|---|---|
| EXOS-27085 | Inter-VLAN loops are not detected by ELRP on NetLogin VLANs when the port is set to MAC-based VLAN. |
| EXOS-27270 | HAL process ends unexpectedly when ExtremeXOS retries detecting unsupported or third-party optics. |
| EXOS-26734 | With loop present, FDB process ends unexpectedly after enabling ELRP hardware-assist feature. |
| SummitStack | |
| EXOS-26963 | Stacks do not come up successfully with default license if ExtremeSwitching X870/X695 series switches are mixed with other platform switches having master-capability set to on. |
| EXOS-27386 | On SummitStacks, STP memory leak occurs on backup node for each MLAG port flap on peer switch. |
| ExtremeSwitching X435 Series Switches | |
| EXOS-27082 | ExtremeSwitching X435-8p switches remain in boot loop due to FDB process ending unexpectedly when upgrading to ExtremeXOS 30.7.1.1. |

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

| Defect Number | Description |
|---|---|
| General | |
| 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. |

**Table 21: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-23 (continued)**

| Defect Number | Description |
|---|---|
| EXOS-26816 | AnSCP2 client session using the cipher option to transfer files from the switch to an SCP server produces the following error: `Error:can't read "args(<cipher>)": no such element in array`. |
| EXOS-26901 | When you configure an explicit time using the `configure time` 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:<br>`<Warn:BGP.UpdateMgr.RtNotAdvertLargeUpdtMsg> A route can not be advertised because it is too large to fit into the maximum allowed size of a BGP UPDATE message. VR = <vr number> Destination address AFI/ SAFI = 4587545 Destination address prefix =<7 32 bit Hex strings forming the BGP route prefix> Destination address prefix length = 216` |
| 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 exsshd 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:<br>`04/12/2020 18:24:54.76 <Erro:HAL.VNet.Error> 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 <Erro:HAL.VXLAN.Error> Cannot create BUM port in standard mode.` |
| EXOS-26825 | After upgrading to ExtremeXOS 30.1, Identity manager Kerberos snooping stops working. |
| EXOS-26814 | Number of SSH key files in `/usr/local/cfg` and `show config exsshd` are not equal. |
| EXOS-26815 | Infrequently, when enabling SSH, the process exsshd 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. |

**Table 21: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7.1-Patch1-23 (continued)**

| Defect Number | Description |
|---|---|
| SummitStack | |
| 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 `show inline-power` **`slot`** *`master_slot`* fails. |
| ExtremeSwitching X440-G2 Series Switches | |
| 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. |
| ExtremeSwitching X460-G2 Series Switches | |
| 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 22: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7**

| Defect Number | Description |
|---|---|
| General | |
| EXOS-20534 | Extreme Management Center does not pass DNS search suffixes to ExtremeXOS switches. |
| 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 `unconfigure` **`slot`** *`slot no`*. |

**Table 22: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

| Defect Number | Description |
|---|---|
| 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 `show configuration rtmgr detail`. |
| EXOS-26429 | If MVR is enabled globally on the user virutal-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 (1.3.6.1.2.1.47.1.1.1.1) 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). |
| 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. |
| ExtremeSwitching X695 Series Switches | |

**Table 22: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

| Defect Number | Description |
|---|---|
| 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 `configure` **`vlan`** *`vlan_name`* **`tag`** *`new_tag`*. |
| 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 `show process group` command. |
| ExtremeSwitching X440-G2 Series Switches | |
| EXOS-19349, EXOS-24065 | After rebooting ExtremeSwitching X440G2-12p switches, port-related warning logs appear. |
| ExtremeSwitching X465 Series Switches | |
| 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. |
| ExtremeSwitching X590 Series Switches | |
| EXOS-26209 | Continuous multicast entry additions and deletions produce IPMC error messages. |
| ExtremeSwitching X435 Series Switches | |
| 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 `show vid` command. |
| ACL | |
| 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. |
| Bidirectional Forwarding Detection (BFD) | |
| 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. |
| Extreme Loop Recovery Protocol (ELRP) | |
| EXOS-10881 | Configuring Extreme Loop Recovery Protocol (ELRP) a very large number of ports results in rejection of the command with the message `Configuration reply is too big`. |

**Table 22: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

| Defect Number | Description |
|---|---|
| EVPN | |
| EXOS-19816 | When VXLAN service VLAN ports go down, BGP.PolicyMgr.RtNotAdvertNHSameTxPeer warning message appears. |
| Extended Edge Switching | |
| 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 `show port description` command displays truncated port numbers of extended slots. |
| Fabric Attach | |
| 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 `clear counters` is not clearing fabric attach statistics. |
| 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. |

**Table 22: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

| Defect Number | Description |
|---|---|
| MLAG | |
| 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. |
| MPLS | |
| 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. |
| Network Login | |
| 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. |
| OSPF | |
| 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. |
| PoE | |
| EXOS-26118 | On SummitStacks with PoE-capable switches, running the `show tech` command causes the PoE process to end unexpectedly. |
| Policy | |
| EXOS-20246 | With ONEPolicy configured, ARP responds are sent with the incorrect VLAN tag when receiving multicast packets on the inactive VLAN. |
| STP | |
| EXOS-26491 | In STP, root switch becomes isolated when root bridge goes down. |
| SummitStack | |
| EXOS-20349 | After enabling VRRP on SummitStacks, source address in ARP packets originated on the Management interface are sent with VRRP Virtual MAC addresses. |
| 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. |
| VXLAN | |

**Table 22: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.7 (continued)**

| Defect Number | Description |
|---|---|
| EXOS-20153 | Need EMS or error log message for when multiple VXLAN RTEP nexthops are pointing to the same interface. |
| EXOS-16574 | In the *ExtremeXOS User Guide*, need to add a note regarding limitation with VXLAN overlay routing. |