



ExtremeXOS Release Notes

Software Version ExtremeXOS 30.1



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Preface

This section discusses the conventions used in this guide, ways to provide feedback, additional help, and other Extreme Networks® publications.

Conventions

This section discusses the conventions used in this guide.

Text Conventions

The following tables list text conventions that are used throughout this guide.

Table 1: Notice Icons





Icon	Notice Type	Alerts you to...
	General Notice	Helpful tips and notices for using the product.
	Note	Important features or instructions.
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.
<i>New!</i>	New Content	Displayed next to new content. This is searchable text within the PDF.

Table 2: Text Conventions

Convention	Description
Screen displays	This typeface indicates command syntax, or represents information as it appears 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 with brackets, such as [Return] or [Esc] . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press [Ctrl]+[Alt]+[Del]
<i>Words in italicized type</i>	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.

Platform-Dependent Conventions

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

- ExtremeSwitching® switches
- Summit® 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.

Providing Feedback to Us

Quality is our first concern at Extreme Networks, and we have made every effort to ensure the accuracy and completeness of this document. We are always striving to improve our documentation and help you work better, so we want to hear from you! We welcome all feedback but especially want to know about:

- Content errors or confusing or conflicting information.
- Ideas for improvements to our documentation so you can find the information you need faster.
- Broken links or usability issues.

If you would like to provide feedback to the Extreme Networks Information Development team, you can do so in two ways:

- Use our short online feedback form at <https://www.extremenetworks.com/documentation-feedback/>.
- Email us at documentation@extremenetworks.com.

Please provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

Getting Help

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

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

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

Call GTAC For immediate support: 1-800-998-2408 (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 and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) 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

Subscribing to Service Notifications

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

- 1 Go to www.extremenetworks.com/support/service-notification-form.
- 2 Complete the form with your information (all fields are required).
- 3 Select the products for which you would like to receive notifications.



Note

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

- 4 Click **Submit**.

Related Publications

ExtremeXOS Publications

- *ACL Solutions Guide*
- *ExtremeXOS 30.1 Command Reference Guide*
- *ExtremeXOS 30.1 EMS Messages Catalog*
- *ExtremeXOS 30.1 Feature License Requirements*
- *ExtremeXOS 30.1 User Guide*
- *ExtremeXOS OpenFlow User Guide*
- *ExtremeXOS Quick Guide*
- *ExtremeXOS Legacy CLI Quick Reference Guide*
- *ExtremeXOS Release Notes*
- *Extreme Hardware/Software Compatibility and Recommendation Matrices*

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

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1 Overview

Security Information
Upgrading ExtremeXOS
Default ExtremeXOS Settings
New and Corrected Features in ExtremeXOS 30.1
New Hardware Supported in ExtremeXOS 30.1
Hardware No Longer Supported
ExtremeXOS Service Verification Tool Feature Removed
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Updating the Programmable Logic Firmware on the Summit X440-G2 and ExtremeSwitching X620 Series Switches
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Compatibility with Extreme Management Center (Formerly NetSight)
Supported MIBs
Tested Third-Party Products
Extreme Switch Security Assessment
Service Notifications

These release notes document ExtremeXOS 30.1, which adds features and resolves software deficiencies.

Security Information

The following section covers important security information for ExtremeXOS 30.1.

OpenSSL Version

ExtremeXOS 30.1 uses FIPS fips-ecp-2.0.16.

Linux Kernel

ExtremeXOS 30.1 uses Linux Kernel 4.14.

Upgrading ExtremeXOS

While ExtremeXOS 30.1 supports all features on all applicable platforms as indicated in these release notes, upgrading to ExtremeXOS 30.1 from releases earlier than 22.2 may involve performance trade-offs of some feature on certain platforms. For information about feature- and platform-specific issues, see [Open Issues](#) on page 64 and [Known Behaviors](#) on page 66. For information about recommended

releases for specific platforms, see <http://www.extremenetworks.com/extreme-hardwaresoftware-compatibility-recommendation-matrices/software-release-recommendations/>.

For instructions about upgrading ExtremeXOS software, see "Software Upgrade and Boot Options" in the *ExtremeXOS 30.1 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.

Default ExtremeXOS® Settings

Table 3 shows the default settings for ExtremeXOS 30.1.

Table 3: Default ExtremeXOS Settings

ExtremeXOSFeature	ExtremeXOS 22.6 Settings	ExtremeXOS 30.1 Settings
Account lockout	After 3 consecutive login failures, account is locked for 5 minutes.	
AVB	Disabled.	
BGP	Disabled.	
BOOTP Relay	Disabled.	
CDP	Enabled.	
Configuration auto save	Disabled.	
Clear-flow	Disabled.	
Diagnostics	Admin level privileges required to show diagnostics.	
DHCP	Disabled.	
IPFIX	Disabled.	
EAPS	Disabled.	
EDP	Enabled.	Enabled on management port.
ELRP	Disabled.	
ESRP	Disabled.	
Extended Edge Switching (VPEX)	Disabled.	
Identity Management	Disabled.	
IGMP	Enabled, set to IGMPv2 compatibility mode.	
IGMP Snooping	Enabled.	
IP Route Compression	Enabled.	
ISIS	Disabled.	

Table 3: Default ExtremeXOS Settings (continued)

ExtremeXOSFeature	ExtremeXOS 22.6 Settings	ExtremeXOS 30.1 Settings
Log	Admin level privileges required to show log.	
Logging memory buffer	Generate an event when the logging memory buffer exceeds 90% of capacity.	
MLD	Disabled.	
MLD Snooping	Disabled.	
MPLS	Disabled.	
MSRP	Disabled.	
MSTP	Enabled.	
NetLogin	All types of authentication are disabled.	
NTP	Disabled.	
ONEPolicy	Disabled.	
OpenFlow	Disabled.	
OSPF	Disabled.	
OVSDB	Disabled.	
Passwords	Plain text password entry not allowed.	
PIM	Disabled.	
PIM Snooping	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.	
STP	Enabled.	
Syslog	Disabled.	
TACACS	Disabled.	
Telnet	Disabled.	
VPLS	All newly created VPLS instances are enabled.	
Watchdog	Enabled.	
Web HTTP server	Disabled.	

New and Corrected Features in ExtremeXOS 30.1

This section lists the new and corrected features supported in the 30.1 software:

MAC Security (MACsec) with Pre-shared Key (PSK) Authentication

This feature provides secure communication between two infrastructure devices using the MAC Security (MACsec) protocol, as defined by *IEEE802.1X-2010 Port Based Network Access Control* and *IEEE802.1AE-2006 Media Access Control (MAC) Security*. Peer authentication is achieved using pre-shared-keys (PSK), which are configured on each device using CLI commands. Interoperability with other MACsec-capable devices is provided

Supported Platforms

Platform	Ports	LRM/MACsec Adapter Required?
Summit X460-G2-24p-24hp, X460-G2-24t-24ht switches	Half-duplex, 1G ports (25-48)	No
	All other SFP/SFP+ ports *	Yes
Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, and X690 series switches	SFP/SFP+ ports *	Yes
Note: * For Summit X460-G2 series switches, the VIM-2X option does not support the LRM/MACsec Adapter.		



Note

The MACsec feature requires the installation of the MAC Security feature pack license.

Note

When an LRM/MACsec Adapter is powered on, ExtremeXOS may update its firmware if a newer version is available. The following message appears. Do not reboot.



```
LRM/MACsec Adapter new firmware update on port <port>. This may take a few
minutes. Please do not reboot the Switch or Adapter.
```

```
-> Downloading new firmware: 100%
```

```
-> Verifying new firmware: 100%
```

```
LRM/MACsec Adapter new firmware update on port <port> complete.
```

Limitations

- This initial release of MACsec only implements point-to-point LANs within a secured network as described in *Clause 7.4 MACsec to support Infrastructure LANs* of the much broader standard

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

outlined in *IEEE802.1X-2010 Port-Based Access Control*. All other sections and clauses are not supported.



Note

MACsec between customer edges over L2VPN is supported on untagged access ports.

- MACsec is only configurable using CLI commands. There is no SNMP access to the two MACsec MIBs defined by IEEE: IEEE8021X-PAE-MIB and IEEE8021-SECY-MIB.
- MACsec is not supported on ports with stacking enabled.
- MACsec is not supported on Extended Edge Switching ports.

New CLI Commands

```
clear macsec counters {ports [port_list]}

create macsec connectivity-association ca_name pre-shared-key ckn ckn
cak {encrypted} cak

delete macsec connectivity-association ca_name

configure macsec connectivity-association ca_name [pre-shared-key {ckn
ckn} cak {encrypted} cak | ports [port_list] [enable | disable]]

configure macsec mka actor-priority actor_priority ports port_list

configure macsec replay-protect [window_size_in_packets | disable] ports
port_list

configure macsec include-sci [enable | disable] ports port_list

configure macsec hw-mode ports port_list [macsec-mode | half-duplex-
mode]

configure macsec initialize ports port_list

show macsec

show macsec { connectivity-association {ca_name}

show macsec ports port-list

show macsec ports port-list configuration

show macsec ports port-list detail
```

Changed CLI Commands

The following show commands now show MACsec information:

```
show ports

show ports information
```

The following show commands now show that a LRM/MACsec adapter is connected to a port:

```
show ports {mgmt | port_list | tag tag} configuration {no-refresh | refresh}
```

```
show port {mgmt | port_list | tag tag} information {detail}
```

MACsec Interoperability with Extreme/Third-Party Devices

The following table shows tested MACsec interoperability with Extreme and third-party devices.

ExtremXOS Switch	Hardware	Software
X460G2-24p-24hp	Virtual Machine	RHEL version 7
	Virtual Machine	CentOS Version 7.5.1804
	Extreme switch TOR 7100g - 71G21K2L2-24P24	EOS 08.41.01.0004
	Juniper EX4200	JUNOS 14.1X53-D15.2

ExtremeXOS 4.14 Linux Kernel Upgrade

ExtremeXOS 30.1 uses Linux kernel 4.14.

Moving to Linux 4.14 introduces various changes to certain functional areas of ExtremeXOS:

- **Address Resolution Protocol (ARP)/Neighbor Discovery (ND):**
 - Configuring IP ARP maximum entries (includes static, dynamic, and incomplete IP ARP) on a per virtual router (VR) basis is not supported.
 - Configuring ND maximum entries (maximum IPv6 neighbors) on a per VR basis is not supported.
 - Configuring IP ARP maximum proxy entries on a per VR basis is not supported.
 - Configuring IP ARP/ND maximum pending entries on per VR basis is not supported.
 - Upgrading from ExtremeXOS 22.x to 30.1 may affect the number of ARP/ND entries loaded as per new ARP/ND global limits.
 - Only kernel supported statistics are supported.
 - IP ARP/ND statistics are not maintained per VR, since the statistics are maintained per ARP/ND table.
 - Timeout of ARP/ND entries follows Linux behavior.
 - Newly configured ARP/ND timeout values apply only to ARP/ND entries that are learned after the new value is set. Previously learned ARP/ND entries timeout after the previously configured time.
- **Route Manager:**
 - All the statistics that are part of `show ipstats vr vr-name` are affected, since the VR option is not supported.
 - Many ICMP features are not supported due to impacts on the `enable icmp` command (see affected commands below).
 - When a network is unreachable, switches return ICMP host unreachable packets instead of ICMP network unreachable packets.
- **IPv4 DAD**—Not supported.
- **IPv6 DAD**—See affected commands below.
- **Multicast Manager:**

- CISCO compatible, non-standard implementation for PIM register message feature is not supported (see [Deleted CLI Commands](#) on page 16).
- The number of supported PIM interface is reduced from 512 to 256 for both IPv4 and IPv6 (see [Limits](#) on page 26).
- Global IGMP statistics in the `show ipstats` commands are affected (see affected commands below and [New CLI Commands](#)).

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X690, X870 series switches.

New CLI Commands

```
show igmp counters
```

```
clear igmp counters
```

Changed CLI Commands

ARP

The following IPARP commands have virtual router keywords/variables deprecated:

```
configure iparp max_entries max_entries
```

```
configure iparp max_pending_entries max_pending_entries
```

```
configure iparp max_proxy_entries max_proxy_entries
```

The following IPARP command has the virtual router keyword removed:

```
clear counters iparp
```

The following neighbor discovery commands have virtual router keywords/variables deprecated:

```
configure neighbor-discovery cache max_entries max_entries
```

```
configure neighbor-discovery cache max_pending_entries
max_pending_entries
```

The following show commands have the ARP unneeded, failed, rejected, total entries, and last rejected information removed from the output.

```
show iparp stats [[vr_name | vr {all | vr_name} ] { no-refresh | refresh}
{vr} summary]
```

```
show iparp stats [vlan {all {vr vr_name}} | [ {vlan} vlan_name | vlan
vlan_list] {no-refresh | refresh}
```

In Request, Out Request, Failed Requests, Proxy Answered, Rx Error, Rejected Count, Rejected Port, and Max ARP entries, In Response, Out Response, Dup IP Addr, Rejected IP, Rejected I/F, and Max ARP pending entries output are removed from the following show command; ARP Global Settings Max

Entries, Max Pending Entries, Max Proxy Entries are added to the output of the following show command:

```
show iparp {ip_addr | mac | [{vlan} vlan_name | vlan vlan_list] |
permanent} {port port {vr vr_name}}
```

Max entries and max pending entries are now under a global settings heading in the following show command:

```
show neighbor-discovery {cache {ipv6}} [{ipv6_addr | mac | permanent]
{vr vr_name}} | [ {vlan} vlan_name | vlan vlan_list] | vr vr_name
```

IPv4 DAD

The following show command has the D (duplicate address detected on VLAN) and T (tentative address) flags removed from the output:

```
show ospf interfaces {vlan vlan-name | area area-identifier | enabled}
```

The following show command has the d (DAD duplicate primary address) and t (DAD tentative primary address) flags removed from the output:

```
show rip interface {detail}
```

The following show command has the D (duplicate address detected on VLAN), t (tentative address), A (address mask reply enabled), M (send parameter problem enabled), P (send port unreachable enabled), T (time stamp reply enabled), u (send unreachable enabled), and X (send time exceeded enabled) flags removed from the output:

```
show ipconfig {ipv4} {vlan vlan_name}
```

IPv6 DAD

The **detail** option is removed from the following show command; the Conflict MAC heading is removed and Interface Failures heading added; the P (prefix address) flag is removed and the l (Link-local address) is added; the t flag is renamed (tentative due to the lack of a valid link-local address) in the following show command:

```
show ipv6 dad {{{vr} vr_name | vr all | {vlan} vlan_name | {tunnel}
tunnel_name} {tentative | valid | duplicate} | {{vr} vr_name} ipaddress}
```

Route Manager

The following show commands have the VR option removed and IGMP statistics (use the new show igmp counters command) removed from the output:

```
show ipstats {ipv4} [{vlan name } | {tunnel} tunnel_name]
```

```
show ipstats ipv6 [{vlan name | tunnel tunnel_name}]
```

Configuration

The following show command is impacted in the areas of ARP, ND, and FDB. The output for FDB after upgrading to ExtremeXOS 30.1 differs from 22.x output because of the changes in per VR-based IPARP

and ND configurations. The loading of ARP/ND entries is constrained by new global limits and ignores pre-30.1 user VR configured limits:

```
show configuration {module-name} {detail}
```

Deleted CLI Commands

The following commands are deprecated and are no longer supported. If they are present in a script or configuration file, they will not run, and an informational error is logged.

IPv4 DAD

```
clear ip dad {{vr} vr_name | vr all | {vlan} vlan_name | {{vr} vr_name}
ipaddress} {counters}
```

```
configure ip dad [off | on | {on} attempts max_solicitations] {{vr}
vr_name | vr all}
```

```
run ip dad [{vlan} vlan_name | {{vr} vr_name} ipaddress]
```

```
show ip dad [[[vr} vr_name {ip_address} | vr all | [ { vlan } vlan_name
| vlan vlan_list ] {tentative | valid | duplicate} | {{vr} vr_name}
ip_address]]
```

IPv6 DAD

```
run ipv6 dad [{vlan} vlan_name | {{vr} vr_name} ipaddress]
```

If you use any of these DAD commands in a configuration file, error messages similar to the following appear in the log:

```
<Noti:cm.sys.ApplCfgObjOptUnsuprt> The "vlan" application "cfgIpDad" configuration object
"ipv4_accept_dad" option is not supported.
<Noti:cm.sys.ApplCfgObjOptUnsuprt> The "vlan" application "cfgIpDad" configuration object
"ipv4_dad_transmits" option is not supported.
```

Route Manager

```
disable ip-option [loose-source-route | strict-source-route | record-
route | record-timestamp | router-alert]
```

```
enable ip-option [loose-source-route | strict-source-route | record-
route | record-timestamp | router-alert]
```

```
enable icmp address-mask {vlan name}
```

```
enable icmp parameter-problem {vlan name}
```

```
enable icmp port-unreachables {vlan name}
```

```
enable icmp time-exceeded {vlan name}
```

```
enable icmp unreachablees {vlan name}
```

```
enable icmp timestamp {vlan name}
```



```

disable icmp address-mask {vlan name}

disable icmp parameter-problem {vlan name}

disable icmp port-unreachables {vlan name}

disable icmp time-exceeded {vlan name}

disable icmp unreachables {vlan name}

disable icmp timestamp {vlan name}

```

If you use any of these route manager commands in a configuration file, error messages similar to the following appear in the log:

```

01/09/2019 19:30:12.26 <Noti:cm.sys.ApplCfgObjOptUnsuprt> The "rtmgr" application "icmp"
configuration object "icmpUnreachables" option is not supported.
01/09/2019 19:30:12.26 <Noti:cm.sys.ApplCfgObjOptUnsuprt> The "rtmgr" application "icmp"
configuration object "icmpTimeStamp" option is not supported.
01/09/2019 19:30:12.26 <Noti:cm.sys.ApplCfgObjOptUnsuprt> The "rtmgr" application "icmp"
configuration object "icmpTimeExceeded" option is not supported.
01/09/2019 19:30:12.26 <Noti:cm.sys.ApplCfgObjOptUnsuprt> The "rtmgr" application "icmp"
configuration object "icmpPortUnreachables" option is not supported.
01/09/2019 19:30:12.26 <Noti:cm.sys.ApplCfgObjOptUnsuprt> The "rtmgr" application "icmp"
configuration object "icmpParamProblem" option is not supported.
01/09/2019 19:30:12.25 <Noti:cm.sys.ApplCfgObjOptUnsuprt> The "rtmgr" application "icmp"
configuration object "icmpAddressMask" option is not supported.

```

If you use any of these route manager commands in a script, error messages similar to the following appear on the console:

```

Error in script "static-bfd2.xsf", line 50
%% Unrecognized command: "enable icmp address-mask vlan "vlan1_2""
%% Invalid input detected.
Error in script "static-bfd2.xsf", line 51
%% Unrecognized command: "enable icmp timestamp vlan "vlan1_2""
%% Invalid input detected.

```

Multicast Manager

```
configure pim {ipv4 | ipv6} register-checksum-to [include-data | exclude-data]
```

Note

The **exclude-data** option in this command is the RFC-compliant implementation. This is the default configuration in 22.x and 30.x versions. The **include-data** option was provided to be compatible with Cisco's implementation. However, Cisco recently has also adopted an RFC-compliant implementation.

If you upgrade to 30.x with an older configuration set to **include-data**, the following error messages are logged, and the switch is upgraded to an **exclude-data** configuration:



```
<Noti:cm.sys.ApplCfgObjOptUnsuprt> The "pim" application "pimGlobal6"
configuration object "regChkSum" option is not supported.
<Noti:cm.sys.ApplCfgObjOptUnsuprt> The "pim" application "pimGlobal"
configuration object "regChkSum" option is not supported.
```

After the switch boots with an 30.x image, error messages no longer appear.

To work with 22.x switches, if you have include-data configuration on your 22.x switch, continuous error messages appear when PIM register messages are exchanged:

```
<Erro:pim.cache.RegMsgCksumFail> Register message from <ip >, to
<ip> failed the checksum test. To avoid these error messages, change to the
default behavior (exclude-data) for the configuration on the 22.x switch.
```

Extreme Loop Recovery Protocol (ELRP) Enhancements

Extreme Loop Recovery Protocol (ELRP) is used to detect network loops in a Layer 2 network. After a loop is detected through ELRP, different actions can be taken, such as blocking certain ports to prevent loops or logging a messages to system log. ExtremeXOS 30.1 provides several enhancements to the ELRP feature:

- The ability to select all VLANs when running one-shot ELRP.
- Allows ELRP to detect loops between untagged ports on different VLANs on the same switch. You can then include or exclude the inter-VLAN loops to be disabled.
- ELRP source MAC address is changed from "00:e0:2b:00:00:01" to "0e:Switch-MAC" to avoid MAC moves with other products such as EOS.

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X690, X870 series switches.

New CLI Commands

```
configure elrp-client inter-vlan-loop-detection [on | off]
```

Changed CLI Commands

Changes are underlined.

```
configure elrp-client one-shot {vlan [vlan_name | all]}ports [ports | all
|none] {remote-endpoints vxlan all} {interval interval {seconds |
milliseconds}} {retry count} {log | print | print-and-log}}
```

```
configure elrp-client disable-ports [exclude | include] [ ports | eaps-
ring-ports | remote-endpoints vxlan | inter-vlan-loop]
```

The following show command now shows whether you have elected to exclude inter-VLAN ports:

```
show elrp disabled-ports
```

Extreme Discovery Protocol (EDP) Enabled on Management Port

Extreme Discovery Protocol (EDP) is now enabled on the management port. Prior to ExtremeXOS 30.1, EDP was not available on the management port.

EDP is useful when Extreme Networks switches are attached to a port. EDP is used to locate neighbor Extreme Networks switches and exchange information about switch configuration. When running on a normal switch port, EDP is used to by the switches to exchange topology information with each other. Information communicated using EDP includes the following:

- Switch MAC address (switch ID)
- Switch software version information
- Switch IP address
- Switch VLAN information
- Switch port number
- Switch port configuration data: duplex, and speed

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X690, X870 series switches.

Changed CLI Commands

The following commands can now enable/disable EDP on the management port:

```
enable edp ports [ports | all]
```

```
disable edp ports [ports | all]
```

Configurable Hash Seed Values

A strategy for preventing hash polarization is to configure different hash seed values that are used by the CRC versions of the custom algorithms on link aggregated group (LAG) switches. With different hash seeds used on neighboring switches, hash polarization can be prevented while maintaining otherwise identical distribution algorithms.

ExtremeXOS 30.1 now provides the ability to configure hash seed values.

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X690, X870 series switches.

New CLI Commands

```
configure sharing address-based custom hash-seed [seed | switch-mac-address]
```

Changed CLI Commands

The following show commands are changed to display custom hash seed information:

```
show sharing
```

```
show port sharing
```

Fabric Attach Standalone Proxy Mode

Fabric Attach standalone proxy mode allows for Fabric Attach proxy functionality in environments without a Fabric Attach server.

Fabric Attach standalone proxy operation supports standard Fabric Attach proxy processing as if a Fabric Attach server has been discovered. You can enable or disable Fabric Attach standalone proxy support—by default, it is disabled. Enabling Fabric Attach standalone proxy mode enables immediate processing of pending NSI/VLAN bindings, if other configuration data, such as static uplink data allows the processing. Previously established settings based on Fabric Attach proxy operation, if present, are reset when Fabric Attach standalone proxy operation is enabled.

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X690, X870 series switches.

New CLI Commands

```
configure fabric attach uplink [port | none]
```

Changed CLI Commands

The following show command now displays information about standalone proxy mode:

```
show fabric attach {agent} {elements} {statistics}
```

Extended Edge Switching Supports Virtual Extensible LAN (VXLAN)

ExtremeXOS 30.1 adds support for Virtual Extensible LAN (VXLAN) on Extended Edge Switching bridge port extenders (BPEs) for tagged tenant VLANs.

Supported Platforms

Summit X670-G2 and ExtremeSwitching X690 series switches.

Single Access Control List (ACL) Can Have Multiple Mirror Actions

Starting with ExtremeXOS 30.1, a single access control list (ACL) can have up to four mirror actions (each with a different mirror instance) to accomplish mirroring the same packet to multiple destinations (port, ERSPAN/remote-ip, RSPAN/remote-tag, etc).

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X690, X870 series switches.

New Hardware Supported in ExtremeXOS 30.1

This section lists the new hardware supported in ExtremeXOS 30.1:

Long Reach Multimode Optics (LRM)/MAC Security (MACSec) adapter.

LRM/MACSec adapter is a 2-port compact external adapter allowing for 10Gb SFP+ LRM and/or MACSec functionality to be extended to switches that do not have the hardware necessary to support these features.

Supported Platforms

LRM/MACSec adapter can be used on the following platforms:

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X690 series switches.

Hardware No Longer Supported

The following hardware is no longer supported in ExtremeXOS 30.1:

Summit X770 series switches

The following hardware is not supported in ExtremeXOS 30.1, but will be supported in a future ExtremeXOS release (targeted for 30.2):

ExtremeSwitching X590 series switches

ExtremeXOS Service Verification Tool Feature Removed

For ExtremeXOS 30.1, the ExtremeXOS Service Verification Tool (ESVT) feature has been removed, including the following commands:

- `clear esvt traffic-test {{vlan} vlan_name}`
- `run esvt traffic-test {vlan} vlan_name loopback-port loopback-port peerswitch- ip ipaddress packet-size packet_size rate rate [Kbps|Mbps |Gbps] duration time [seconds | minutes | hours]`
- `show esvt traffic-test {{vlan} vlan_name}`
- `stop esvt traffic-test {{vlan} vlan_name}`

Changed Ping Behavior

Due to upgrading ExtremeXOS 30.1 to 4.14 Linux kernel, ping success to local IP addresses does not depend on link-layer status.

Earlier releases of ExtremeXOS had customized Linux behavior that meant that pinging a local VLAN interface would fail when the local interface was down. However, in ExtremeXOS 30.1, pinging a local VLAN interface that is down will result in a successful ping.

Virtual Router Redundancy Protocol (VRRP) and Multi-switch Link Aggregation Group (MLAG) can be impacted by this change if locally configured IP addresses are used to determine network reachability. For details, see the `ping` command.

Updating the Programmable Logic Firmware on the Summit X440-G2 and ExtremeSwitching X620 Series Switches

You can update the programmable logic firmware components (FPGA and PLD) on the ExtremeSwitching X440-G2 and X620 series switches. Starting with ExtremeXOS 22.3, a firmware update was made available for the ExtremeSwitching X440-G2 and X620 series switches that provides the following enhancements:

- Enhanced robustness of interface-to-system LEDs and power supply status signals
- Added support for "Repeated Start" mechanism to improve interface to a subset of optics that require it
- Additional power monitoring (ExtremeSwitching X620 only)

However, because of manufacturing cut-in times, some switches may have older firmware. If the switch requires an update, the following messages appear during system start-up:

```
<Warn:HAL.Card.Warning> Switch PLD1 firmware is out of date, do 'install firmware' to update.
<Warn:HAL.Card.Warning> Switch FPGA firmware is out of date, do 'install firmware' to update.
```

To view the current firmware versions, use the command `show version detail`. The following shows sample output from this command with the firmware version in bold:

```
# show version detail
Switch      : 800624-00-01 1516G-01246 Rev 1.0 BootROM: 1.0.1.7   IMG: 22.3.0.35
             FPGA: 1.1.42.0 PLD1: 1.0.10.0
...
```

The new firmware versions included in ExtremeXOS 22.3 and later are FPGA 1.1.44.0 and PLD 2.0.14.0.

Use the `install firmware` command to update the firmware. Running this command requires a reboot of the switch, which can be performed at any time after the command has completed. For more information about this command, see the [ExtremeXOS 30.1 Command Reference Guide](#).

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, as well as pluggable transceivers and cables.

This guide also provides information about which optics are supported on which hardware platforms, and the minimum software version required.

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

Compatibility with Extreme Management Center (Formerly NetSight)

ExtremeXOS 30.1 is compatible with the version of Extreme Management Center as shown in this table: http://emc.extremenetworks.com/content/common/releasenotes/extended_firmware_support.htm

Supported MIBs

The Extreme Networks MIBs are located at www.extremenetworks.com/support/policies/mibs/.

You need to provide your serial number or agreement number, and then 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 30.1 User Guide*.

Tested Third-Party Products

This section lists the third-party products tested for ExtremeXOS 30.1.

Tested RADIUS Servers

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS

Tested Third-Party Clients

The following third-party clients are fully tested:

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

PoE Capable VoIP Phones

The following PoE capable VoIP phones are fully tested:

- Avaya 4620
- Avaya 4620SW IP telephone
- Avaya 9620
- Avaya 4602
- Avaya 9630
- Avaya 4621SW
- Avaya 4610
- Avaya 1616
- Avaya one-X
- Cisco 7970
- Cisco 7910
- Cisco 7960
- ShoreTel ShorePhone IP 212k
- ShoreTel ShorePhone IP 560
- ShoreTel ShorePhone IP 560g
- ShoreTel ShorePhone IP 8000
- ShoreTel ShorePhone IP BB 24
- Siemens OptiPoint 410 standard-2
- Siemens OpenStage 20
- Siemens OpenStage 40
- Siemens OpenStage 60
- Siemens OpenStage 80

Extreme Switch Security Assessment

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

Service Notifications

To receive proactive service notification about newly released software or technical service communications (for example, field notices, product change notices, etc.), please register at: www.extremenetworks.com/support/service-notification-form

2 Limits

This chapter summarizes the supported limits in ExtremeXOS 30.1.

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

- [Supported Limits for Edge License](#) on page 26
- [Supported Limits for Advanced Edge License](#) on page 51
- [Supported Limits for Core License](#) on page 58

For more information about licenses, see [ExtremeXOS 30.1 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, Summit X670-G2 or ExtremeSwitching X690 series switches) in use. For applicable limits, see the following tables for the controlling bridge you are using.

Supported Limits for Edge License

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

Table 4: Supported Limits for Edge License

Metric	Product	Limit
AAA (local) —maximum number of admin and local user accounts.	All platforms	8
Access lists (meters) —maximum number of meters.	ExtremeSwitching X620, X440-G2	1,024 ingress 256 egress
	Summit X670-G2, X450-G2, X460-G2	1,024 ingress 512 egress
	ExtremeSwitching X870, X690	2,048 ingress 512 egress
Access lists (policies) —suggested maximum number of lines in a single policy file.	All platforms	300,000
Access lists (policies) —maximum number of rules in a single policy file. ^a	Summit X460-G2, X450-G2, X670-G2	4,096 ingress 1,024 egress
	ExtremeSwitching X620, X440-G2	2,048 ingress 512 egress
	ExtremeSwitching X870	3,072 ingress 1,024 egress
	ExtremeSwitching X690	8,192 ingress 1,024 egress
Access lists (policies) —maximum number of rules in a single policy file in first stage (VFP).	Summit X450-G2, X460-G2	2,048 ingress only
	Summit X670-G2, ExtremeSwitching X870, X690	1,024 ingress only
	ExtremeSwitching X620, X440-G2	512 ingress only
Access lists (slices) —number of ACL slices.	Summit X460-G2, X450-G2	16 ingress 4 egress
	Summit X670-G2, ExtremeSwitching X690,	12 ingress 4 egress
	ExtremeSwitching X440-G2, X620	8 ingress 4 egress
	ExtremeSwitching X870	4 ingress 4 egress
Access lists (slices) —number of ACL slices in first stage (VFP).	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	4 ingress only
ACL Per Port Meters —number of meters supported per port.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16
ACL port ranges	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	32
Meters Packets-Per-Second Capable	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	Yes

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
AVB (audio video bridging)—maximum number of active streams.	Summit X450-G2, X460-G2, and ExtremeSwitching X620, X440-G2	1,024
	Summit X670-G2	4,096
	ExtremeSwitching X690, X870	N/A
BFD sessions (Software Mode)—maximum number of BFD sessions.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X440-G2, X620, X870, X690 (default timers—1 sec)	512
	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X440-G2, X620, X870, X690 (minimal timers—100 msec)	10 ^c
BFD IPv4 sessions (Hardware Assisted)—maximum number of IPv4 BFD sessions.	Summit X460-G2, ExtremeSwitching X870, X690	900 (PTP not enabled) 425 (PTP enabled) 256 (with 3 ms transmit interval)
BFD IPv6 sessions (Hardware Assisted)—maximum number of IPv6 BFD sessions.	Summit X460-G2, ExtremeSwitching X870, X690	425 (PTP not enabled)
BOOTP/DHCP relay—maximum number of BOOTP or DHCP servers per virtual router.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	8
BOOTP/DHCP relay—maximum number of BOOTP or DHCP servers per VLAN.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	8
BOOTP/DHCP relay—maximum number of DHCPv4/v6 relay agents	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	4,000
Connectivity fault management (CFM)—maximum number of CFM domains. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	8
CFM—maximum number of CFM associations. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	256
CFM—maximum number of CFM up end points. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	32

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
<p>CFM—maximum number of CFM down end points.</p> <p>Note: With Advanced Edge license or higher.</p>	<p>Summit X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690</p> <p>Summit X460-G2</p>	<p>32</p> <p>256 (non-load shared ports) 32 (load shared ports)</p>
<p>CFM—maximum number of CFM remote end points per up/down end point.</p> <p>Note: With Advanced Edge license or higher.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690</p>	2,000
<p>CFM—maximum number of dot1ag ports.</p> <p>Note: With Advanced Edge license or higher.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690</p>	128
<p>CFM—maximum number of CFM segments.</p> <p>Note: With Advanced Edge license or higher.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690</p>	1,000
<p>CFM—maximum number of MIPs.</p> <p>Note: With Advanced Edge license or higher.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X440-G2, X870, X690</p>	256
<p>CLEAR-Flow—total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs.</p>	<p>Summit X460-G2, X670-G2, X450-G2</p> <p>ExtremeSwitching X440-G2, X620</p> <p>ExtremeSwitching X870</p> <p>ExtremeSwitching X690</p>	<p>4,094</p> <p>1,024</p> <p>3,072</p> <p>8,192</p>
<p>Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)—maximum number of DCBX application TLVs.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690</p>	8
<p>DHCPv6 Prefix Delegation Snooping—Maximum number of DHCPv6 prefix delegation snooped entries.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X440-G2, X870, X690</p>	<p>256 (with Underlying Protocol Ripng)</p> <p>128 (with Underlying protocol OSPFv3)</p> <p>1,024 (with static routes)</p>
<p>DHCP snooping entries—maximum number of DHCP snooping entries.</p>	<p>Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X440-G2, X870, X690</p>	2,048

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
<p>Dynamic ACLs—maximum number of ACLs processed per second.</p> <p>Note: Limits are load dependent.</p>	<p>Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690</p> <p>with 50 DACLs with 500 DACLs</p>	<p>10 5</p>
<p>EAPS domains—maximum number of EAPS domains.</p> <p>Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.</p> <p>Note: You can increase the number of domains by upgrading to the Advanced Edge license.</p>	<p>Summit X670-G2, X450-G2, X460-G2, and ExtremeSwitching X440-G2, X620, X870, X690</p>	<p>4</p>
<p>EAPSV1 protected VLANs—maximum number of protected VLANs.</p>	<p>Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2</p> <p>ExtremeSwitching X870, X690</p>	<p>1,000 2,000</p>
<p>ERPS domains—maximum number of ERPS domains with or without CFM configured.</p> <p>Note: You can increase the number of domains by upgrading to the Advanced Edge license.</p>	<p>Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690</p>	<p>4</p>
<p>ERPSV1 protected VLANs—maximum number of protected VLANs.</p>	<p>ExtremeSwitching X870, X690</p> <p>Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X620, X440-G2</p>	<p>2,000 1,000</p>
<p>ERPSV2 protected VLANs—maximum number of protected VLANs.</p>	<p>Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690</p> <p>ExtremeSwitching X620, X440-G2</p>	<p>2,000 500</p>
<p>ELSM (vlan-ports)—maximum number of VLAN ports.</p>	<p>Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X870, X690</p> <p>ExtremeSwitching X440-G2</p>	<p>5,000 4,000</p>
<p>Extended Edge Switching maximum BPEs—maximum number of attached bridge port extenders (BPEs).</p>	<p>Summit X670-G2, ExtremeSwitching X690</p>	<p>48</p>
<p>Extended Edge Switching maximum cascade ports—maximum number of upstream ports on bridge port extenders (BPEs).</p>	<p>Summit X670-G2, ExtremeSwitching X690</p>	<p>2 on V400-24 models 4 on V400-48 models</p>
<p>Extended Edge Switching maximum tiers—maximum number of cascade levels (tiers) of bridge port extenders (BPEs).</p>	<p>Summit X670-G2, ExtremeSwitching X690</p>	<p>4</p>

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Extended Edge Switching VLAN+ port memberships —maximum number of VLAN+ (extended) port memberships.	Summit X670-G2, ExtremeSwitching X690	12,000 in hash mode (default) 131,000 in port-group mode
Forwarding rate —maximum L3 software forwarding rate.	ExtremeSwitching X690 ExtremeSwitching X870 Summit X450-G2 Summit X460-G2 ExtremeSwitching X620 Summit X670-G2 ExtremeSwitching X440-G2	30,000 pps 32,000 pps 16,000 pps 17,000 pps 10,000 pps 15,000 pps 9,000 pps
FDB (unicast blackhole entries) —maximum number of unicast blackhole FDB entries.	Summit X460-G2 Summit X670-G2 Summit X450-G2 ExtremeSwitching X620, X440-G2 ExtremeSwitching X870 ExtremeSwitching X690	49,152 ^f 294,912 ^f 34,816 ^f 16,384 ^f 139,264 ^f 278,528 ^f
FDB (multicast blackhole entries) —maximum number of multicast blackhole FDB entries.	Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620 Summit X670-G2, ExtremeSwitching X870, X690	1,024 4,096
FDB (maximum L2 entries) —maximum number of MAC addresses.	Summit X460-G2 Summit X670-G2 Summit X450-G2 ExtremeSwitching X620, X440-G2 ExtremeSwitching X870 ExtremeSwitching X690	98,300 ^g 294,912 ^g 68,000 ^g 16,384 139,264 ^g 278,528 ^g
FDB (Maximum L2 entries) —maximum number of multicast FDB entries.	Summit X670-G2, ExtremeSwitching X870, X690 Summit X450-G2, X460-G2, and ExtremeSwitching X620, X440-G2	4,096 1,024
Identity management —maximum number of Blacklist entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	512
Identity management —maximum number of Whitelist entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	512
Identity management —maximum number of roles that can be created.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	64
Identity management —maximum role hierarchy depth allowed.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	5

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Identity management —maximum number of attribute value pairs in a role match criteria.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16
Identity management —maximum of child roles for a role.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
Identity management —maximum number of policies/dynamic ACLs that can be configured per role.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
Identity management —maximum number of LDAP servers that can be configured.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
Identity management —maximum number of Kerberos servers that can be configured.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	20
Identity management —maximum database memory-size.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	512
Identity management —recommended number of identities per switch. Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	100
Identity management —recommended number of ACL entries per identity. Note: Number of ACLs per identity based on system ACL limitation.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	20
Identity management —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	500
IGMP snooping per VLAN filters —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	Summit X460-G2, ExtremeSwitching X870 Summit X450-G2 Summit X670-G2 ExtremeSwitching X620, X440-G2 ExtremeSwitching X690	1,500 2,048 2,000 1,000 4,000
IGMPv1/v2 SSM-map entries —maximum number of IGMPv1/v2 SSM mapping entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	500
IGMPv1/v2 SSM-map entries —maximum number of sources per group in IGMPv1/v2 SSM mapping entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	50

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
IGMPv2 subscriber—maximum number of IGMPv2 subscribers per port. [†]	Summit X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690	4,000
IGMPv2 subscriber—maximum number of IGMPv2 subscribers per switch. [†]	Summit X670-G2	30,000
	Summit X460-G2, X450-G2	20,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X870, X690	45,000
IGMPv3 maximum source per group—maximum number of source addresses per group.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	250
IGMPv3 subscriber—maximum number of IGMPv3 subscribers per port. [†]	Summit X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690	4,000
IGMPv3 subscriber—maximum number of IGMPv3 subscribers per switch. [†]	Summit X460-G2, X450-G2	20,000
	Summit X670-G2	30,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X870, X690	45,000
IP ARP entries in software—maximum number of IP ARP entries in software. Note: May be limited by hardware capacity of FDB (maximum L2 entries).	Summit X670-G2	131,072 (up to) ^h
	Summit X460-G2	57,344 (up to) ^h
	Summit X450-G2	47,000 (up to) ^h
	ExtremeSwitching X440-G2, X620	20,480
	ExtremeSwitching X870	94,206 (up to) ^h
	ExtremeSwitching X690	157,694 (up to) ^h
IPv4 ARP entries in hardware with minimum LPM routes—maximum recommended number of IPv4 ARP entries in hardware, with minimum LPM routes present. Assumes number of IP route reserved entries is 100 or less.	ExtremeSwitching X870	74,000 (up to) ^h
	Summit X460-G2	50,000 (up to) ^h
	Summit X670-G2	108,000 (up to) ^h
	Summit X450-G2	39,000 (up to) ^h
	ExtremeSwitching X620	1,500
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X690	122,000 (up to) ^h

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
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
	Summit X460-G2	43,000 (up to) ^h
	Summit X670-G2	98,000 (up to) ^h
	Summit X450-G2	29,000 (up to) ^h
	ExtremeSwitching X620	1,500
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X690	112,000 (up to) ^h
IP flow information export (IPFIX)—number of simultaneous flows.	Summit X460-G2	2,048 ingress 2,048 egress
	Summit X450-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	N/A
IPv4 remote hosts in hardware with zero LPM routes—maximum recommended number of IPv4 remote hosts (hosts reachable through a gateway) in hardware when LPM routing is not used. Assumes number of IP route reserved entries is 0, and number of IPv4 ARP entries present is 100 or less.	ExtremeSwitching X870	120,000 (up to) ^h
	Summit X460-G2	73,000 ^h
	Summit X670-G2	176,000 (up to) ^h
	Summit X450-G2	61,000 (up to) ^h
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X690	216,000 (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.	Summit X460-G2, X450-G2, X440-G2, X620	25,000
	Summit X670-G2, ExtremeSwitching X690, X870	131,000
IPv4 routes (LPM entries in hardware) — number of IPv4 routes in hardware.	Summit X460-G2	12,000
	Summit X450-G2	16,000
	Summit X670-G2, ExtremeSwitching X690, X870	131,000 ^a
	ExtremeSwitching X620, X440-G2	480
IPv6 6in4 tunnel—maximum number of IPv6 6in4 tunnels.	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870, X690	255
	ExtremeSwitching X440-G2, X620	N/A
IPv6 6to4 tunnel—maximum number of IPv6 6to4 tunnels.	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870, X690	1 (per virtual router)
	ExtremeSwitching X440-G2, X620	N/A
IPv6 addresses on an interface—maximum number of IPv6 addresses on an interface.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	255

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
IPv6 addresses on a switch—maximum number of IPv6 addresses on a switch.	Summit X670-G2, X460-G2, X450-G2, ExtremeSwitching X870, X690	2,048
	ExtremeSwitching X620, X440-G2	510
IPv6 host entries in hardware—maximum number of IPv6 neighbor entries in hardware.	Summit X670-G2	36,750 ^h
	Summit X460-G2	22,000 ^h
	Summit X450-G2	12,000 ^h
	ExtremeSwitching X440-G2	1,000
	ExtremeSwitching X620	1,500
	ExtremeSwitching X690	32,000 ^h
IPv6 routes in software—maximum number of IPv6 routes in software, including static routes and routes from all routing protocols.	Summit X450-G2, X460-G2, and ExtremeSwitching X620, X440-G2	25,000
	Summit X670-G2, ExtremeSwitching X690, X870	65,000 ^q
IPv6 routes (LPM entries in hardware)—maximum number of IPv6 routes in hardware.	Summit X460-G2	6,000
	Summit X450-G2	8,000
	Summit X670-G2, ExtremeSwitching X690, X870	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.	Summit X670-G2, ExtremeSwitching X690, X870	8,192 ^r
	ExtremeSwitching X440-G2, X620	1,024
	Summit X450-G2, X460-G2	2,048
IPv6 route sharing in hardware—route mask lengths for which ECMP is supported in hardware.	Summit X460-G2, X450-G2, and ExtremeSwitching X620	0–64 >64 single path only
	Summit X670-G2, and ExtremeSwitching X690, X870	0–128 ^r
	ExtremeSwitching X440-G2	Not supported
IP router interfaces—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690	2,048
	ExtremeSwitching X620, X440-G2	510
IP multicast static routes—maximum number of permanent multicast IP routes.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690	1,024
IP unicast static routes—maximum number of permanent IP unicast routes.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690	1,024
	ExtremeSwitching X620, X440-G2	480

Table 4: 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.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X870, X690 ExtremeSwitching X440-G2	2, 4, 8, 16, 32, or 64 N/A

Table 4: 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.	Summit 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
	Summit 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		
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 30.1 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	
if maximum gateways is 16 (default)	1,022	
if maximum gateways is 32	510	
if maximum gateways is 64	254	
ExtremeSwitching X440-G2		N/A

Table 4: Supported Limits for Edge License (continued)

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

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Layer-2 IPMC forwarding caches —(IGMP/MLD/PIM snooping) in mac-vlan mode. Note: <ul style="list-style-type: none"> The internal lookup table configuration used is "I2-and-I3". IPv6 and IPv4 L2 IPMC scaling is the same for this mode. Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are same. 	Summit X670-G2	73,000
	Summit X460-G2	24,000
	Summit X450-G2	14,000
	ExtremeSwitching X620, X440-G2	5,000
	ExtremeSwitching X870	36,000
	ExtremeSwitching X690	67,000
Layer-3 IPv4 Multicast —maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled). Note: <ul style="list-style-type: none"> Limit value same for MVR senders, PIM Snooping entries. PIM SSM cache, IGMP senders, PIM cache. The internal lookup table configuration used is "more I3-and-ipmc". Assumes source-group-vlan mode as look up key. Layer 3 IPMC cache limit in mixed mode also has the same value. 	Summit X460-G2	26,000
	Summit X450-G2	21,000
	Summit X670-G2	77,500
	ExtremeSwitching X620, X440-G2	1,500
	ExtremeSwitching X870	52,000
	ExtremeSwitching X690	93,000
Layer-3 IPv6 Multicast —maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled). Note: <ul style="list-style-type: none"> Limit value same for MLD sender per switch, PIM IPv6 cache. The internal lookup table configuration used is "more I3-and-ipmc". Assumes source-group-vlan mode as look up key. 	Summit X670-G2	30,000
	Summit X460-G2	14,000
	Summit X450-G2	10,000
	ExtremeSwitching X620, X440-G2	700
	ExtremeSwitching X870	18,000
	ExtremeSwitching X690	48,000

Table 4: Supported Limits for Edge License (continued)

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

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Maximum mirroring instances	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690 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. So this allows the you to use a total of four slots, while there are no more then two egress instances. The maximum possible combination for mirroring instances: 1 4 ingress 2 3 ingress + 1 egress 3 2 ingress + 2 egress 4 2 (ingress + egress) 5 1 (ingress + egress) + 2 ingress 6 1 (ingress + egress) + 1 egress + 1 ingress	16 (including default mirroring instance)
	ExtremeSwitching X620, X440-G2 Note: For stacks containing X620 or X440-G2, maximum supported egress mirror instances is 1.	1 (egress)
Mirroring (filters) —maximum number of mirroring filters. Note: This is the number of filters across all the active mirroring instances.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	128
Mirroring, one-to-many (filters) —maximum number of one-to-many mirroring filters. Note: This is the number of filters across all the active mirroring instances.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	128
Mirroring, one-to-many (monitor port) —maximum number of one-to-many monitor ports.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16
MLAG ports —maximum number of MLAG ports allowed.	Summit X670-G2, ExtremeSwitching X690	71
	ExtremeSwitching X440-G2, Summit X450-G2	51
	Summit X460-G2	53
	ExtremeSwitching X620	15
	ExtremeSwitching X870	127

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
MLAG peers —maximum number of MLAG peers allowed.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	2
MPLS RSVP-TE interfaces —maximum number of interfaces.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	32
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	2,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE egress LSPs —maximum number of egress LSPs.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	2,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE transit LSPs —maximum number of transit LSPs.	Summit X460-G2, X670-G2	2,000
	ExtremeSwitching X870, X690	4,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE paths —maximum number of paths.	Summit X460-G2	1,000
	Summit X670-G2, ExtremeSwitching X870, X690	2,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE profiles —maximum number of profiles.	Summit X460-G2	1,000
	Summit X670-G2, ExtremeSwitching X870, X690	2,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS RSVP-TE EROs —maximum number of EROs per path.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	64
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS LDP peers —maximum number of MPLS LDP peers per switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	128
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS LDP adjacencies —maximum number of MPLS LDP adjacencies per switch.	Summit X460-G2	50
	Summit X670-G2, ExtremeSwitching X870, X690	64
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
MPLS LDP ingress LSPs—maximum number of MPLS LSPs that can originate from a switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	2,048
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS LDP-enabled interfaces—maximum number of MPLS LDP configured interfaces per switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	128
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS LDP transit LSPs—maximum number of MPLS transit LSPs per switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	4,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS LDP egress LSPs—maximum number of MPLS egress LSPs that can terminate on a switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	4,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS static egress LSPs—maximum number of static egress LSPs.	Summit X460-G2	7,116
	ExtremeSwitching X870, X690, Summit X670-G2	8,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS static ingress LSPs—maximum number of static ingress LSPs.	Summit X460-G2, ExtremeSwitching X870, X690	4,000
	Summit X670-G2	2,048
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS static transit LSPs—maximum number of static transit LSPs	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	4,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
Multicast listener discovery (MLD) snooping per-VLAN filters—maximum number of VLANs supported in per-VLAN MLD snooping mode.	Summit X460-G2, X670-G2, ExtremeSwitching X870	1,200
	Summit X450-G2	512
	ExtremeSwitching X620, X440-G2	600
	ExtremeSwitching X690	1,500
Multicast listener discovery (MLD)v1 subscribers—maximum number of MLDv1 subscribers per port. ¹	Summit X670-G2, X450-G2, X460-G2	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690	4,000
Multicast listener discovery (MLD)v1 subscribers—maximum number of MLDv1 subscribers per switch. ¹	Summit X460-G2, X450-G2, ExtremeSwitching X620, X440-G2	10,000
	Summit X670-G2	30,000
	ExtremeSwitching X870, X690	45,000

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per port. ⁿ	Summit X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690	4,000
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per switch. ⁿ	Summit X670-G2	30,000
	Summit X460-G2, X450-G2, ExtremeSwitching X620, X440-G2	10,000
	ExtremeSwitching X870, X690	45,000
Multicast listener discovery (MLD)v2 maximum source per group —maximum number of source addresses per group.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	200
Multicast listener discovery (MLD) SSM-map entries —maximum number of MLD SSM mapping entries.	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870, X690	500
	ExtremeSwitching X440-G2, X620	50
Multicast listener discovery (MLD) SSM-MAP entries —maximum number of sources per group in MLD SSM mapping entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	50
Network Login —maximum number of clients being authenticated on MAC-based VLAN enabled ports.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	1,024
Network Login —maximum number of clients being authenticated with policy mode enabled with TCI overwrite enabled.	Summit X450-G2, X460-G2	1,024
	Summit X670-G2, ExtremeSwitching X870, X690	512
	ExtremeSwitching X620, X440-G2	256
Network Login —maximum number of dynamic VLANs.	Summit X460-G2, X450-G2, X670-G2, ExtremeSwitching X870, X690	2,000
	ExtremeSwitching X440-G2, X620	1,024
Network Login VLAN VSAs —maximum number of VLANs a client can be authenticated on at any given time.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	10
Network Service Identifiers (NSI)/VLAN mappings —maximum number of VLANs to NSI mappings.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	94
Node Alias —maximum number of entries per slot.	Summit X450-G2, X460-G2, X670-G2 and ExtremeSwitching X620, X440-G2, X870, X690	8,192
ONEPolicy Roles/Profiles —maximum number of policy roles/profiles.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	63

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
ONEPolicy Rules per Role/Profile—maximum number of rules per role/policy.	Summit X450-G2, X460-G2	IPv6 rules: 256 IPv4 rules: 256 L2 Rules: 184 MAC Rules: 256
	Summit X670-G2, ExtremeSwitching X870	IPv6 Rules: 256 L2 Rules: 184 MAC Rules: 256 IPv4 Rules: 256
	ExtremeSwitching X620, X440-G2	IPv6 and Mac Rules: 0 Ipv4 Rules: 256 (per switch) L2 Rules: 184 (per switch)
	ExtremeSwitching X690	IPv4 Rules: 512 IPv6 Rules: 512 MAC Rules: 512 L2 Rules: 440
ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per port only with TCI-Overwrite enabled.	Summit X450-G2, X460-G2	1,024
	Summit X670-G2, ExtremeSwitching X690, X870	512
	ExtremeSwitching X620, X440-G2	256
	Stacking	Depends on the stack nodes.
ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per switch with TCI-Overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	ExtremeSwitching X690	24,576
	Summit X670-G2, X460-G2, ExtremeSwitching X870	12,288
	Summit 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. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	Summit X450-G2	6,144
	Summit 460-G2, X670-G2, and ExtremeSwitching X870	12,288
	ExtremeSwitching X690	24,576
	ExtremeSwitching X440-G2, X620	1,536
ONEPolicy Authenticated Users per Port per Switch— maximum number of authenticated users per port with only with TCI-Overwrite enabled.	Summit X450-G2, X460-G2	1,024
	Summit X670-G2, ExtremeSwitching X870, X690	512
	ExtremeSwitching X620, X440-G2	256

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
ONEPolicy Permit/Deny Traffic Classification Rules Types —total maximum number of unique permit/deny traffic classification rules types (system/stack).	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870	952
	ExtremeSwitching X620, X440-G2	440
	ExtremeSwitching X690	1,976
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest).	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870	256
	ExtremeSwitching X620, X440-G2	N/A
	ExtremeSwitching X690	512
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest).	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870	256
	ExtremeSwitching X620, X440-G2	N/A
	ExtremeSwitching X690	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).	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X620, X440-G2, X870	256
	ExtremeSwitching X690	512
ONEPolicy Permit/Deny Traffic Classification Rules Types —maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port).	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870	184
	ExtremeSwitching X620, X440-G2	184
	ExtremeSwitching X690	440
Policy-based routing (PBR) redundancy —maximum number of flow-redirects.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	256°
Policy-based routing (PBR) redundancy —maximum number of next hops per each flow-direct.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	32°
Private VLANs —maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN.	Summit X670-G2	63
	Summit X460-G2	53
	Summit X450-G2	51
	ExtremeSwitching X440-G2	47
	ExtremeSwitching X620	15
	ExtremeSwitching X870	127
	ExtremeSwitching X690	71

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Private VLANs —maximum number of private VLANs with an IP address on the network VLAN. Note: This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	1,024
	Summit X450-G2	510
	ExtremeSwitching X440-G2	255
	ExtremeSwitching X620	510
Private VLANs —maximum number of private VLANs in an L2-only environment.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	1,280
	Summit X450-G2	597
	ExtremeSwitching X440-G2, X620	255
PTP/1588v2 Clock Ports	Summit X460-G2, X670-G2	32 for boundary clock 1 for ordinary clock
	ExtremeSwitching X440-G2, X620, X870, X690	N/A
PTP/1588v2 Clock Instances	Summit X670-G2, X460-G2	2 combinations: <ul style="list-style-type: none"> • Transparent clock + ordinary clock • Transparent clock + boundary clock
	ExtremeSwitching X440-G2, X620, X870, X690	N/A
PTP/1588v2 Unicast Static Slaves	Summit X670-G2, X460-G2	40 entries per clock port
	ExtremeSwitching X440-G2, X620, X870, X690	N/A
PTP/1588v2 Unicast Static Masters	Summit X670-G2, X460-G2	10 entries per clock type
	ExtremeSwitching X440-G2, X620, X870, X690	N/A
Route policies —suggested maximum number of lines in a route policy file.	Summit X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	10,000
RIP Learned Routes —maximum number of RIP routes supported without aggregation.	Summit X670-G2, X460-G2, and ExtremeSwitching X440-G2, X620, X870, X690	10,000
RIP interfaces on a single router —recommended maximum number of RIP routed interfaces on a switch.	Summit X670-G2, X460-G2, X450-G2, ExtremeSwitching X870, X690	256
	ExtremeSwitching X440-G2, X620	128

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
RIPng learned routes—maximum number of RIPng routes.	Summit X670-G2, X460-G2, X450-G2, X870, X690	3,000
	ExtremeSwitching X440-G2, X620	N/A
Spanning Tree (maximum STPDs)—maximum number of Spanning Tree Domains on port mode EMISTP.	Summit X450-G2, X670-G2, X460-G2, and ExtremeSwitching X620, X870, X690	64
	ExtremeSwitching X440-G2	32
Spanning Tree PVST+—maximum number of port mode PVST domains. Note: For all platforms, the maximum number of active ports per PVST domain depends on the maximum number of spanning tree ports supported on given platform. For example, Summit 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).	Summit X670-G2, and ExtremeSwitching X620	256
	Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2	128
	ExtremeSwitching X870, X690	384
Spanning Tree—maximum number of multiple spanning tree instances (MSTI) domains.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X870, X690	64
	ExtremeSwitching X440-G2	32
Spanning Tree—maximum number of VLANs per MSTI. Note: Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI.	Summit X670-G2	500
	Summit X460-G2, X450-G2, ExtremeSwitching X620, X870, X690	600
	ExtremeSwitching X440-G2	256
Spanning Tree—maximum number of VLANs on all MSTP instances.	Summit X670-G2, X460-G2, X450-G2, ExtremeSwitching X620, X870, X690	1,024
	ExtremeSwitching X440-G2	512
Spanning Tree (802.1d domains)—maximum number of 802.1d domains per port.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	1
Spanning Tree (number of ports)—maximum number of ports including all Spanning Tree domains.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X870, X690	4,096
	ExtremeSwitching X440-G2	2,048
Spanning Tree (maximum VLANs)—maximum number of STP-protected VLANs (dot1d and dot1w).	Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X620, X870, X690	1,024
	ExtremeSwitching X440-G2	600
SSH (number of sessions)—maximum number of simultaneous SSH sessions.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Static MAC multicast FDB entries —maximum number of permanent multicast MAC entries configured into the FDB.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	1,024
Syslog servers —maximum number of simultaneous Syslog servers that are supported.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16
Syslog targets —maximum number of configurable Syslog targets.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16
Telnet (number of sessions) —maximum number of simultaneous Telnet sessions.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
Virtual routers —maximum number of user-created virtual routers that can be created on a switch.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690 ExtremeSwitching X440-G2, X620	63 16 (local-only VRs)
Virtual router forwarding (VRFs) —maximum number of VRFs that can be created on a switch. Note: * Subject to other system limitations.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690 ExtremeSwitching X440-G2, X620	960 * 16 (local-only VRFs)
Virtual router protocols per VR —maximum number of routing protocols per VR.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690 ExtremeSwitching X440-G2, X620	8 N/A
Virtual router protocols per switch —maximum number of VR protocols per switch.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690 ExtremeSwitching X440-G2, X620	64 N/A
VLAN aggregation —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	1,000
VLANs —includes all VLANs. 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.)	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	4,094
VLANs (Layer 2) —maximum number of Layer 2 VLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	4,094
VLANs (Layer 3) —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690 ExtremeSwitching X440-G2, X620	2,048 510

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
VLANs (maximum active port-based) —maximum active ports per VLAN when 4,094 VLANs are configured with default license.	Summit X670-G2, ExtremeSwitching X870, X690	32
	ExtremeSwitching X440-G2	28
	Summit X460-G2	26
	ExtremeSwitching X620	16
	Summit X450-G2	29
	Summit X460-G2	24
VLANs (maximum active protocol-sensitive filters) —number of simultaneously active protocol filters in the switch.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16
VLAN translation —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN.	Summit X670-G2	63
	Summit X460-G2	53
	Summit X450-G2	51
	ExtremeSwitching X620	15
	ExtremeSwitching X440-G2	47
	ExtremeSwitching X870	127
	ExtremeSwitching X690	71
VLAN translation —maximum number of translation VLAN pairs with an IP address on the translation VLAN. Note: This limit is dependent on the maximum number of translation VLAN pairs in an L2-only environment if the configuration has tagged and translated ports.	Summit X670-G2, ExtremeSwitching X870, X690	1,024
	Summit X450-G2	512
	ExtremeSwitching X620	510
	ExtremeSwitching X440-G2	255
VLAN translation —maximum number of translation VLAN pairs in an L2-only environment.	Summit X450-G2, X670-G2, X460-G2, ExtremeSwitching X870, X690	2,046
	ExtremeSwitching X440-G2, X620	255
XML requests —maximum number of XML requests per second. Note: Limits are dependent on load and type of XML request. These values are dynamic ACL data requests.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690	10 with 100 DACLs
XNV authentication —maximum number of VMs that can be processed (combination of local and network VMs).	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	2,048
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	1,024

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
XNV database entries —maximum number of VM database entries (combination of local and network VMs).	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	16,000
XNV database entries —maximum number of VPP database entries (combination of local and network VPPs).	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	2,048
XNV dynamic VLAN —Maximum number of dynamic VLANs created (from VPPs /local VMs).	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	2,048
XNV local VPPs —maximum number of XNV local VPPs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	2,048 ingress 512 egress
XNV policies/dynamic ACLs —maximum number of policies/dynamic ACLs that can be configured per VPP.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8 ingress 4 egress
XNV network VPPs —maximum number of XNV network VPPs. ^P	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	2,048 ingress 512 egress

Supported Limits for Advanced Edge License

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

Table 5: Supported Limits for Advanced Edge License

Metric	Product	Limit
BGP auto-peering —maximum number of auto-peering nodes and VTEPs.	Summit X670-G2, ExtremeSwitching X690, X870	64
BGP auto-peering attached IPv4 hosts — maximum number of attached IPv4 hosts.	Summit X670-G2 ExtremeSwitching X870, X690	16,000 64,000
BGP auto-peering attached IPv6 hosts — maximum number of attached IPv6 hosts.	Summit X670-G2 ExtremeSwitching X870, X690	254 8,000
BGP auto-peering ECMP —maximum number equal cost multipath for auto-peering. Note: * Subject to the limitation imposed by the number of physical ports on a switch.	Summit X670-G2, ExtremeSwitching X690, X870	16*
BGP auto-peering maximum IPv4 prefixes with ECMP —Maximum number of IPv4 Network prefixes with ECMP.	Summit X670-G2, ExtremeSwitching X690, X870	64,000

Table 5: Supported Limits for Advanced Edge License (continued)

Metric	Product	Limit
BGP auto-peering maximum IPv6 prefixes with ECMP —Maximum number of IPv6 Network prefixes with ECMP.	Summit X670-G2, ExtremeSwitching X690, X870	8,000
BGP auto-peering MLAG peers —maximum MLAG peers per AutoBGP node.	Summit X670-G2, ExtremeSwitching X690, X870	1
BGP auto-peering VRFs —maximum number of VRFs.	Summit X670-G2, ExtremeSwitching X690, X870	64
BGP auto-peering EVPN instances —maximum EVPN instances.	Summit X670-G2, ExtremeSwitching X690, X870	4,096
BGP auto-peering asymmetrical routing tenant VLANs —maximum number of tenant VLANs supporting asymmetric routing.	Summit X670-G2, ExtremeSwitching X690, X870	1,024
EAPS domains —maximum number of EAPS domains. Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains.	ExtremeSwitching X870, X690 Summit X670-G2, X450-G2, X460-G2 ExtremeSwitching X440-G2, X620	128 64 32
EAPSV2 protected VLANs —maximum number of protected VLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620 ExtremeSwitching X870, X690	500 2,000
ERPS domains —maximum number of ERPS domains without CFM configured.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	32
ERPS domains —maximum number of ERPS domains with CFM configured.	Summit X450-G2, X670-G2, and ExtremeSwitching X620, X870, X690 Summit X460-G2	16 32
ERPSv1 protected VLANs —maximum number of protected VLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690 ExtremeSwitching X620, X440-G2	2,000 1,000
ERPSv2 protected VLANs —maximum number of protected VLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690 ExtremeSwitching X620, X440-G2	2,000 500
ESRP groups —maximum number of ESRP groups	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X440-G2, X620, X870, X690	32

Table 5: Supported Limits for Advanced Edge License (continued)

Metric	Product	Limit
ESRP domains —maximum number of ESRP domains.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	64
ESRP L2 VLANs —maximum number of ESRP VLANs without an IP address configured.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	1,000
ESRP L3 VLANs —maximum number of ESRP VLANs with an IP address configured.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	511
ESRP (maximum ping tracks) —maximum number of ping tracks per VLAN.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
ESRP (IP route tracks) —maximum IP route tracks per VLAN.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
ESRP (VLAN tracks) —maximum number of VLAN tracks per VLAN.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	1
OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690	64
	ExtremeSwitching X620	4
	ExtremeSwitching X440-G2	N/A
OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	8
	Summit X450-G2, ExtremeSwitching X440-G2, X620	4
OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690	10,000
	Summit X670-G2, X460-G2	5,000
	Summit X450-G2, ExtremeSwitching 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	4,000
	Summit X670-G2, X460-G2	2,000
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	1,000
OSPFv2 interfaces —recommended maximum number of OSPF interfaces on a switch (active interfaces only).	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	4
OSPFv2 links —maximum number of links in the router LSA.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	400
	Summit X450-G2, and ExtremeSwitching X620, X440-G2	4

Table 5: Supported Limits for Advanced Edge License (continued)

Metric	Product	Limit
OSPFv2 neighbors—maximum number of supported OSPF adjacencies.	Summit X450-G2, X670-G2, X460-G2, and ExtremeSwitching X440-G2, X620, X870, X690	4
OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690	100
	Summit X670-G2, X460-G2	50
	Summit X450-G2, ExtremeSwitching X440-G2, X620	4
OSPFv2 virtual links—maximum number of supported OSPF virtual links.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	32
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	4
OSPFv3 areas—as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690	100
	Summit X460-G2, X670-G2	16
	Summit X450-G2, ExtremeSwitching X440-G2, X620	4
OSPFv3 external routes—recommended maximum number of external routes.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	10,000
	Summit X450-G2, ExtremeSwitching X440-G2, X620	1,200
OSPFv3 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690	4,000
	Summit X670-G2, X460-G2	3,000
	Summit X450-G2, ExtremeSwitching X440-G2, X620	500
OSPFv3 interfaces—maximum number of OSPFv3 interfaces (active interfaces only).	Summit X670-G2, X460-G2, X450-G2, ExtremeSwitching X870, X690, X440-G2, X620	4
OSPFv3 neighbors—maximum number of OSPFv3 neighbors.	Summit X450-G2, X670-G2, X460-G2, ExtremeSwitching X870, X690, X440-G2, X620	4
OSPFv3 virtual links—maximum number of OSPFv3 virtual links supported.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	16
	Summit X450-G2, ExtremeSwitching X440-G2, X620	4
OVSDB Manager Connections—Maximum number of connections to managers that can be configured (either of TCP, PTCP, SSL, or PSSL).	Summit X670-G2, ExtremeSwitching X870, X690	8
	Smmit X450-G2	N/A
OVSDB Managed Switches—Maximum number of OVSDB-managed switches.	Summit X670-G2, ExtremeSwitching X870, X690	1
	Smmit X450-G2	N/A

Table 5: Supported Limits for Advanced Edge License (continued)

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

Table 5: Supported Limits for Advanced Edge License (continued)

Metric	Product	Limit
Port-specific VLAN tags—maximum number of port-specific VLAN tag ports.	Summit X670-G2	6,400
	Summit X460-G2, ExtremeSwitching X870, X690	4,000
	Summit X450-G2, and ExtremeSwitching 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. Note: These limits are applicable for Fabric Routing configuration also. Note: Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type.	Normal Mode (as individual VRs):	
	Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X870, X690	511
	ExtremeSwitching X440-G2, X620	128
	Scaled Mode (with groups):	
	Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X870, X690	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) Note: These limits are applicable for Fabric Routing configuration also. Note: Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type.	Normal Mode (as individual VRs):	
	Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X870, X690	511
	ExtremeSwitching X440-G2, X620	128
	Scaled Mode (with groups):	
	Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X870, X690	2,048
	ExtremeSwitching X440-G2, X620	128
VRRP (v2/v3-IPv4/IPv6) (maximum VRID)—maximum number of unique VRID numbers per switch.	Summit X670-G2, X460-G2, X450-G2 and ExtremeSwitching X440-G2, X620, X870, X690 Note: With Advanced Edge license or higher.	255
VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN)—maximum number of VRIDs per VLAN.	Summit X670-G2, X460-G2, X450-G2 and ExtremeSwitching X440-G2, X620, X870, X690 Note: With Advanced Edge license or higher.	255

Table 5: Supported Limits for Advanced Edge License (continued)

Metric	Product	Limit
VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks) —maximum number of ping tracks per VLAN.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690 Note: With Advanced Edge license or higher.	8
VRRP (maximum ping tracks) —maximum number of ping tracks per VRRP Instance under 128 VRRP instances, with Advanced Edge license or higher.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	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.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8 (20 centisecond or 1 second hello interval)
VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks) —maximum number of IP route tracks per VLAN.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
VRRP (v2/v3-IPv4/IPv6) —maximum number of VLAN tracks per VLAN.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690	8
VXLAN —maximum virtual networks. Note: Every VPLS instance/PSTag VLAN reduces this limit by 1. Note: Assumption is all BUM (broadcast/unknown-unicast/multicast) FDB entries are pointing to the same set of RTEPs when all VNETs use explicit flooding. Depends on whether all VNETs use standard or explicit and the number of tenant VLAN ports.	Summit X670-G2, and ExtremeSwitching X870, X690 Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	2,048–4,000 N/A
VXLAN —maximum tenant VLANs plus port combinations Note: Every (VPLS/PSTag VLAN) + port reduces the limit by 1.	Summit X670-G2, and ExtremeSwitching X870, X690 Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	4,096 N/A
VXLAN —maximum static MAC to IP bindings. Note: Every FDB entry configured reduces this limit by 1.	Summit X670-G2, and ExtremeSwitching X870, X690 Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	64,000 N/A

Table 5: Supported Limits for Advanced Edge License (continued)

Metric	Product	Limit
VXLAN—maximum RTEP IP addresses	Summit X670-G2, and ExtremeSwitching X870, X690	512
	Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	N/A
VXLAN—maximum virtual networks with dynamic learning and OSPF extensions for VXLAN	Summit X670-G2, and ExtremeSwitching X870, X690	4,000
	Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	N/A

Supported Limits for Core License

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

Table 6: Supported Limits for Core License

Metric	Product	Limit
BGP (aggregates)—maximum number of BGP aggregates.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	256
	Summit X450-G2	204
BGP (networks)—maximum number of BGP networks.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	1,024
	Summit X450-G2	820
BGP (peers)—maximum number of BGP peers. Note: With default keepalive and hold timers.	Summit X460-G2, X670-G2, ExtremeSwitching X870	128
	ExtremeSwitching X690	300
	Summit X450-G2	100
BGP (peer groups)—maximum number of BGP peer groups.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	64
	Summit X450-G2	50
BGP (policy entries)—maximum number of BGP policy entries per route policy.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	256
	Summit X450-G2	204
BGP (policy statements)—maximum number of BGP policy statements per route policy.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	1,024
	Summit X450-G2	820
BGP multicast address-family routes —maximum number of multicast address-family routes.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	25,000
	Summit X450-G2	20,000

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
BGP (unicast address-family routes) —maximum number of unicast address-family routes.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690(at default)	25,000
	ExtremeSwitching X870, X690(with ALPM enabled)	100,000
	Summit X450-G2	20,000
BGP (non-unique routes) —maximum number of non-unique BGP routes.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	25,000
	Summit X450-G2	20,000
BGP ECMP —maximum number of equal cost multipath for BGP and BGPv6.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	2, 4, 8, 16, 32, or 64
	Summit X450-G2	64
BGPv6 (unicast address-family routes) —maximum number of unicast address family routes.	Summit X460-G2	6,000
	Summit X670-G2	8,000
	ExtremeSwitching X870, X690	10,000
	ExtremeSwitching X870, X690 (with ALPM enabled)	100,000
	Summit X450-G2	4,800
BGPv6 (non-unique routes) —maximum number of non-unique BGP routes.	Summit X460-G2	18,000
	Summit X670-G2, ExtremeSwitching X870, X690	24,000
	Summit X450-G2	14,000
GRE Tunnels —maximum number of GRE tunnels.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X870, X690	255
	ExtremeSwitching X620, X440G2	N/A
IS-IS adjacencies —maximum number of supported IS-IS adjacencies.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	128
	Summit X450-G2	N/A
IS-IS ECMP —maximum number of equal cost multipath for IS-IS.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	2, 4, or 8
	Summit X450-G2	N/A
IS-IS interfaces —maximum number of interfaces that can support IS-IS.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	255
	Summit X450-G2	N/A
IS-IS routers in an area —recommended maximum number of IS-IS routers in an area.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	256
	Summit X450-G2	N/A

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
IS-IS route origination—recommended maximum number of routes that can be originated by an IS-IS node.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	20,000
	Summit 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.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	25,000
	Summit X450-G2	N/A
IS-IS IPv4 L2 routes—recommended maximum number of IS-IS Level 2 routes.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	25,000
	Summit 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.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	20,000
	Summit 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.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	10,000
	Summit X450-G2	N/A
IS-IS IPv6 L2 routes—recommended maximum number of IS-IS Level 2 routes.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	10,000
	Summit X450-G2	N/A
IS-IS IPv6 L1 routes in an L1/L2 router—recommended maximum number of IS-IS Level 1 routes in a L1/L2 router.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	10,000
	Summit 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.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	20,000
	Summit 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.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	20,000
	Summit X450-G2	N/A
IS-IS IPv4/IPv6 L1 routes in an L1/L2 router—recommended maximum number of IS-IS Level 1 routes in a Level 1/Level2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	20,000
	Summit X450-G2	N/A
MSDP active peers—maximum number of active MSDP peers.	Summit X450-G2, X670-G2, X460-G2, ExtremeSwitching X870, X690	64

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
MSDP SA cache entries—maximum number of entries in SA cache.	Summit X670-G2, ExtremeSwitching X690	14,000
	Summit X460-G2	10,000
	ExtremeSwitching X870	11,000
	Summit X450-G2	8,000
MSDP maximum mesh groups—maximum number of MSDP mesh groups.	Summit X450-G2, X670-G2, X460-G2, ExtremeSwitching X870, X690	16
OSPFv2/v3 ECMP—maximum number of equal cost multipath OSPFv2 and OSPFv3.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690	64
OSPFv2 areas—as an ABR, how many OSPF areas are supported within the same switch.	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870, X690	8
OSPFv2 external routes—recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690	10,000
	Summit X670-G2, X460-G2	5,000
	Summit 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	4,000
	Summit X670-G2, X460-G2	2,000
	Summit X450-G2	1,600
OSPFv2 interfaces—recommended maximum number of OSPF interfaces on a switch (active interfaces only).	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	400
	Summit X450-G2	320
OSPFv2 links—maximum number of links in the router LSA.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	400
	Summit X450-G2	320
OSPFv2 neighbors—maximum number of supported OSPF adjacencies.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	128
	Summit X450-G2	96
OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690	100
	Summit X670-G2, X460-G2	50
	Summit X450-G2	40
OSPFv2 virtual links—maximum number of supported OSPF virtual links.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690	32
	Summit X450-G2	25

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
OSPFv3 areas—as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690	100
	Summit X460-G2, X670-G2	16
	Summit X450-G2	12
OSPFv3 external routes—recommended maximum number of external routes.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	10,000
	Summit X450-G2	7,500
OSPFv3 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690	4,000
	Summit X670-G2, X460-G2	3,000
	Summit X450-G2	500
OSPFv3 interfaces—maximum number of OSPFv3 interfaces (active interfaces only).	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	256
	Summit X450-G2	192
OSPFv3 neighbors—maximum number of OSPFv3 neighbors.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	64
	Summit X450-G2	48
OSPFv3 virtual links—maximum number of OSPFv3 virtual links supported.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690	16
	Summit X450-G2	12
PIM IPv4 (maximum interfaces)—maximum number of PIM active interfaces.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	256
PIM IPv4 Limits—maximum number of multicast groups per dynamic rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	180
PIM IPv4 Limits—maximum number of multicast groups per static rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	3,000 (depends on policy file limits)
PIM IPv4 Limits—maximum number of multicast sources per group.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	5,000
PIM IPv4 Limits—maximum number of dynamic rendezvous points per multicast group.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	145
PIM IPv4 Limits—static rendezvous points.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	32
PIM IPv6 (maximum interfaces)—maximum number of PIM active interfaces.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	256

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
PIM IPv6 Limits—maximum number of multicast sources per group.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690	2,500
	Summit X450-G2,	1,500
PIM IPv6 Limits—maximum number of multicast groups per dynamic rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	70
PIM IPv6 Limits—maximum number of multicast groups per static rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	3,000 (depends on policy file limits)
PIM IPv6 Limits—maximum number of dynamic rendezvous points per multicast group.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	64
PIM IPv6 Limits—maximum number of secondary address per interface.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	70
PIM IPv6 Limits—static rendezvous points.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690	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 I2".

^h Based on "configure forwarding internal-tables more I3-and-ipmc".

^j The limit depends on setting configured with configure iproute reserved-entries.

^m The IPv4 and IPv6 multicast entries share the same hardware tables, so the effective number of IPv6 multicast entries depends on the number of IPv4 multicast entries present and vice-versa.

ⁿ If IGMP and MLD are simultaneously configured on the switch, the number of effective subscribers supported would be appropriately lessened.

^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`.

3 Open Issues, Known Behaviors, and Resolved Issues

Open Issues Known Behaviors Resolved Issues in ExtremeXOS 30.1

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 30.1.

Table 7: Open Issues, Platform-Specific, and Feature Change Requests (CRs)

CR Number	Description
General	
xos0073536	When Host-Mobility is configured, it is recommended to configure a default IPv6 route using the command <code>configure iproute add blackhole ipv6 default</code> or <code>configure iproute add default ipv6Gateway</code> .
xos0073277	For ExtremeXOS 30.1, the ExtremeXO Service Verification Test (ESVT) tool has been removed. If you are upgrading from an earlier release, the following error message appears: "Error while loading structure <aclZoneAppObj><appl_name><![CDATA[ESVT]]></appl_name><zone_name><![CDATA[SYSTEM]]></zone_name><appl_priority>4</appl_priority><appl_ref>1</appl_ref><default_appl_priority>4</default_appl_priority><default_zone_name><![CDATA[SYSTEM]]></default_zone_name><zone_priority>2</zone_priority></aclZoneAppObj>: Application ESVT is not a valid application <aclZoneAppObj>"
xos0071708	Refresh option for clear iparp and clear neighbor-discovery commands does not work correctly. All entries are cleared.
xos0072819	After upgrading to ExtremeXOS 30.1, six logs are generated for each VLAN on the switch for unsupported ICMP features: address-mask, port-unreachables, unreachable, parameter-problem, time-exceeded, and timestamp.

**Table 7: Open Issues, Platform-Specific, and Feature Change Requests (CRs)
(continued)**

CR Number	Description
xos0072120	<p>A few FDB entries may not be re-learned if the following commands are executed twice without waiting for all the entries to be re-learned when 2,000 interfaces are created on the switch and continuous IPv4 traffic is sent through all the interfaces:</p> <ul style="list-style-type: none"> • <code>clear fdb</code> • <code>restart port port-number</code> • <code>disable port port-number</code> and <code>enable port port-number</code> <p>Workaround: Execute <code>restart port port-number</code> once.</p>
xos0072228	<p>Interface flags in the <code>show ipconfig</code> output do not match the flag values in the <code>show ipconfig vlan-name</code> output.</p>
ExtremeSwitching X620 Series Switches	
xos0072580	<p>For ExtremeSwitching X620 series switches, after applying policy configuration changes with <code>disable policy</code> and <code>enable policy</code> on a LAG master port that is in down state, NetLogin authentication may fail on the port.</p> <p>Workaround: To reinstate NetLogin on the port, run the command <code>clear netlogin state port LAG master port</code>.</p>
Extended Edge Switching	
xos0073266	<p>When Extended Edge Switching auto-configuration is used, the MLAG master ports connecting to BPEs on the two peers are not always the same. This leads to different local keys being used by the MLAG peers and traffic being lost in case of a failover.</p> <p>Workaround:</p> <ul style="list-style-type: none"> • To avoid this issue, use only one connection to each BPE before running auto-configuration. After the BPE is up, add the second connection if needed. • To recover from this issue, if the LAG master port is configured differently for the same BPE on two peers, manually re-configure the LAG port on one peer so that both peers have the same LAG master port for the same BPE.
MAC Security	
xos0073434	<p>For MAC Security (MACsec)-enabled ports on an Summit X460G-2hc (ports 25-48) with <code>include-sci</code> enabled, if you receive MACsec encrypted packets with a bad SCI tag, the counter "Not Valid Pkts" is incremented instead of "Rx No SCI Pkts" under the <code>show macsec port port_num detail</code> output. Note that ports attached to an LRM/MACsec Adapter handle this properly.</p>
xos0073404	<p>When the remote MAC Security (MACsec) connection transmits the MKPDUs for the MACsec protocol (usually 1 every 2 seconds) the ports with an LRM/MACsec Adapter count these in the "Rx No Tag Pkts" under the <code>show macsec port port_num detail</code> output. Though these packets are untagged, they are received on the uncontrolled port for the MACsec protocol and should not increment this controlled port drop counter. This issue is specific to MACsec-enabled ports with an LRM/MACsec Adapter only.</p>

Known Behaviors

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

Table 8: Known Issues, Platform-Specific, and Feature Change Requests (CRs)

CR Number	Description
General	
xos0071238	Due to upgrading ExtremeXOS 30.1 to 4.14 Linux kernel, ping success to local IP addresses does not depend on link-layer status. Earlier releases of ExtremeXOS had customized Linux behavior that meant that pinging a local VLAN interface would fail when the local interface was down. However, in ExtremeXOS 30.1, pinging a local VLAN interface that is down will result in a successful ping.
xos0071351	When a network is unreachable, switches return ICMP host unreachable packets instead of ICMP network unreachable packets.
ACLs	
xos0073140	Clearflow counters work when ACLs are applied to VLANs, but not if applied to ports or wildcards.
xos0072272	For VXLAN tunnel endpoints (VTEPs), the following ACL match conditions/actions do not work: <ul style="list-style-type: none"> • Destination MAC and Source IP match condition combination • Source MAC and Destination IP match condition combination • Redirect-port-list action
Extended Edge Switching	
xos0073364	Extended port LAGs cannot be present in VXLAN tenant VLANs.
xos0073328	Extended ports cannot be untagged members of VXLAN tenant VLANs.

Resolved Issues in ExtremeXOS 30.1

The following issues were resolved in ExtremeXOS 30.1. ExtremeXOS 30.1 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, and ExtremeXOS 22.6. For information about those fixes, see the release notes for the specific release.

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.1

CR Number	Description
General	
xos0070383	In the master node of a stack, if you set var time to greater than or equal to 400, the switch becomes unresponsive and requires a reboot.

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.1 (continued)

CR Number	Description
xos0072841	Operational diagnostics version 3.0 for ONIE series switches (released with ExtremeXOS 22.6) may fail to run due to a hardware watchdog expiration prior to the diagnostics application taking over the watchdog. Since the 3.0 version of diagnostics is only required for ExtremeSwitching X590 series switches, you can leave the previous version 2.6 installed on ExtremeSwitching X870 or X690 series switches and continue to use that version. For installations that are already upgraded to 3.0 using the 22.6 diagnostics XMOD, and see this issue, two workarounds are possible: <ul style="list-style-type: none"> • Run diagnostics and monitor progress. If diagnostics reboots the switch before running, the watchdog is disabled after reboot, and the switch reboots to the GRUB menu. Manually select primary or secondary diagnostics from the GRUB menu to run the operational diagnostics. • Power cycle the switch and select primary or secondary diagnostics from the GRUB menu instead of EXOS. Diagnostics run before ExtremeXOS can enable the watchdog function.
ExtremeSwitching X690 Series Switches	
xos0071218	On ExtremeSwitching X690-48x switches, the flow control appears as "None" for the first 8 ports.
BGP	
xos0070563	When BGP route flap dampening suppresses a route, a withdrawn route update is not sent to neighbors that the route was previously advertised to.
BGP Auto-peering	
xos0070932	With BGP auto-peering and VXLAN setup, traffic is not forwarded to some RTEPs, when back-to-back ECMP links are connected.
xos0072456	After port flaps in BGP auto-peering setup, incorrect MAC gateway is programmed.
NetLogin	
xos0072208	Web-based NetLogin does not work if the supplied URL contains keywords such as "login", "hello", etc.
OSPFv2	
xos0072748	After rebooting the switch, OSPF address range conflict error messages appear when summarized route range subnets between the OSPF areas overlap.
OSPFv3	
xos0070014	With a single OSPFv3 interface configured, while executing <code>show ospfv3 neighbor</code> , switch stops responding.
SNMP	
xos0070961	Broadcast SNMP get/set-requests are processed by switches even though no IP address is configured on any VLANs.
xos0072267	SNMP users created by scripts and saved from another switch do not work.
Stacking	
xos0073370	ExtremeSwitching X440-G2 and X620 series switches are not stable when used in a stack.

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.1 (continued)

CR Number	Description
STP	
xos0071418	Ports configured for BPDU restriction are re-enabled on recovery-timeout even if administratively disabled.
xos0072872	On Extended Edge Switching configurations, the STP port of peer switch, goes to "blocking" instead of "disabled" state when the connecting port on root bridge is disabled using the command <code>disable port port #</code> .