



ExtremeXOS Release Notes

Software Version ExtremeXOS 30.3



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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
<code>Screen displays</code>	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 30.3 Command Reference Guide*
- *ExtremeXOS 30.3 EMS Messages Catalog*
- *ExtremeXOS 30.3 Feature License Requirements*
- *ExtremeXOS 30.3 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*

Extreme Management Center Publications

- *ISW-Series Managed Industrial Ethernet Switch Extreme Management Center User Guide*

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1 Overview

Security Information
Upgrading ExtremeXOS
Default ExtremeXOS Settings
Extended Edge Switching Image Download Issue
New and Corrected Features in ExtremeXOS 30.3
New Hardware Supported in ExtremeXOS 30.3
Extreme Hardware/Software Compatibility and Recommendation Matrices
Compatibility with Extreme Management Center (Formerly NetSight)
Supported MIBs
Tested Third-Party Products
Extreme Switch Security Assessment
Service Notifications

These release notes document ExtremeXOS 30.3, which adds features and resolves software deficiencies.

Security Information

The following section covers important security information for ExtremeXOS 30.3.

OpenSSL Version

ExtremeXOS 30.3 uses FIPS fips-ecp-2.0.16.

Linux Kernel

ExtremeXOS 30.3 uses Linux Kernel 4.14.

Upgrading ExtremeXOS

For instructions about upgrading ExtremeXOS software, see "Software Upgrade and Boot Options" in the *ExtremeXOS 30.3 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 starting with version 22.6, and shows any changes that have been made to these settings and in what version these changes were made.

Table 3: Default ExtremeXOS Settings

ExtremeXOS Feature	ExtremeXOS 22.6 Settings	ExtremeXOS 30.1 Settings	ExtremeXOS 30.3
Account Lockout	After 3 consecutive login failures, account is locked for 5 minutes.		
AVB	Disabled.		
BFD Strict Session Protection	N/A.	N/A.	Disabled.
BGP	Disabled.		
Bluetooth	N/A.	N/A.	Enabled.
BOOTP Relay	Disabled.		
CDP	Enabled.		
Configuration auto save	Disabled.		
Clear-flow	Disabled.		
Diagnostics	Admin level privileges required to show diagnostics.		
DHCP	Disabled.		
DNS Cache Resolver and Analytics	N/A.	N/A.	Disabled.
IPFIX	Disabled.		
EAPS	Disabled.		
EDP	Enabled.	Enabled on management port.	
ELRP	Disabled.		
ESRP	Disabled.		
Extended Edge Switching (VPEX)	Disabled.		
Identity Management	Disabled.		
IGMP	Enabled, set to IGMPv2 compatibility mode.		
IGMP Snooping	Enabled.		

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

Table 3: Default ExtremeXOS Settings (continued)

ExtremeXOS Feature	ExtremeXOS 22.6 Settings	ExtremeXOS 30.1 Settings	ExtremeXOS 30.3
IP Route Compression	Enabled.		
ISIS	Disabled.		
Log	Admin level privileges required to show log.		
Logging memory buffer	Generate an event when the logging memory buffer exceeds 90% of capacity.		
MAC Security	N/A	Disabled.	
MLD	Disabled.		
MLD Snooping	Disabled.		
MPLS	Disabled.		
MSRP	Disabled.		
MSTP	Enabled.		
NetLogin	All types of authentication are disabled.		
NTP	Disabled.		
ONEPolicy	Disabled.		
OpenFlow	Disabled.		
OSPF	Disabled.		
OVSDDB	Disabled.		
Passwords	Plain text password entry not allowed.		
PIM	Disabled.		
PIM Snooping	Disabled.		
PoE Fast PoE Perpetual PoE	Enabled. N/A. N/A.		Enabled. Disabled. Disabled.
RADIUS	Disabled for both switch management and network login.		
RIP	Disabled.		
RMON	Disabled. However, even in the disabled state, the switch responds to RMON queries and sets for alarms and events.		
sFlow	Disabled.		

Table 3: Default ExtremeXOS Settings (continued)

ExtremeXOS Feature	ExtremeXOS 22.6 Settings	ExtremeXOS 30.1 Settings	ExtremeXOS 30.3
SNMP server	Disabled.		
SSH	Disabled.		
Stacking	Disabled.		
Stacking auto-discovery	N/A.	N/A.	Enabled.
STP	Enabled.		
Syslog	Disabled.		
TACACS	Disabled.		
Telnet	Disabled.		
VPLS	All newly created VPLS instances are enabled.		
Watchdog	Enabled.		
Web HTTP server	Disabled.		

Extended Edge Switching Image Download Issue

If you are upgrading an Extended Edge Switching configuration (controlling bridge (CB) and bridge port extenders (BPEs)) from ExtremeXOS 22.7.1 or earlier to ExtremeXOS 30.3 or later, you cannot upgrade automatically using the combined `.1st` file. Instead, instead you must perform a manual upgrade. ExtremeXOS 22.7.1-Patch1-3 and later do *not* have this issue.

To perform a manual upgrade:

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

For more information about manual upgrades, see the *Manual Upgrading* section in the *Extended Edge Switching Chapter* in the [ExtremeXOS 30.3 User Guide](#).

After this one-time upgrade, you can perform all subsequent ExtremeXOS upgrades automatically using the `.1st` file. For more information about automatic upgrades, see the *Automatic Upgrading* section in the *Extended Edge Switching Chapter* in the [ExtremeXOS 30.3 User Guide](#).

New and Corrected Features in ExtremeXOS 30.3

This section lists the new and corrected features supported in the 30.3 software:

Domain Name System (DNS) Cache Resolver and Analytics Engine

The Domain Name System (DNS) cache resolver feature implements a cache of DNS queries on the switch, so that repeated queries can be handled directly by the switch, rather than by repeatedly forwarding the requests to the DNS servers, consuming time and network resources.

The DNS analytics engine analyzes the DNS queries (IPv4 and IPv6) from all connected clients and keeps track of received DNS queries from clients, and domains accessed along with time stamps. By using the cache and analytics, audits can be performed on the details of queries coming from clients, which allows for threat mitigation.

Supported Platforms

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

Limitations

- TCP DNS queries are not cached.
- The DNS cache feature and the L7 DNS feature in ONEPolicy should not be enabled at the same time.
- Checkpointing is not supported in a stack or a MLAG setup for DNS caching.

New CLI Commands

```
enable dns cache {{vlan} vlan_name | {{vr} vr_name}
disable dns cache {{vlan} vlan_name | {{vr} vr_name}
show dns cache configuration {{vlan} vlan_name | {{vr} vr_name}
configure dns cache [add | delete] name-server ip_address {{vr} vr_name}
show dns cache name-server
show dns cache {{current} {{detail}}
clear dns cache
enable dns cache analytics {{vr} vr_name}
disable dns cache analytics {{vr} vr_name}
configure dns cache analytics [{{timeout minutes} {{max-entries max_entries}}]
show dns cache analytics configuration {{vr} vr_name}
show dns cache analytics statistics {{client client_ip domain domain_name } {{detail}} {{vr} vr_name}}
clear dns cache analytics entries {{vr} vr_name}}
```

```
configure dns cache analytics [add | delete] protected-client [client_ip
netmask | ipNetmask] {{vr} vr_name}
```

```
show dns cache analytics protected-client {{vr} vr_name}
```

Stacking Auto-discovery

Prior to ExtremeXOS 30.3, the stacking automation feature in ExtremeXOS ensured that replacing a node in a stack would cause the node to receive a slot assignment, be set as master-capable (if applicable), assigned the stack MAC address, but the stacking would only be enabled on the dedicated stack ports on the Summit X450-G2 and X460-G2 with attached VIM-2ss or VIM-2q modules. For all other switches, you had to manually enable stacking on the applicable port.

With ExtremeXOS 30.3, the stacking auto-discovery feature allows a greater number of switch models (see below) when added to replace a node in a stack, to auto-discover its stack links, auto-provision its stacking parameters, and join the existing stack.

Supported Platforms

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

Limitations

Partitioned stack ports (for example, 4x10G or 4x25G) are not supported.

New CLI Commands

```
configure stacking-support auto-discovery [disable | enable]
```

Changed CLI Commands

The following show command now shows the status of the stacking auto-discovery feature:

```
show stacking-support
```

ISC DHCPv6 Client Upgraded to 4.4.1

With ExtremeXOS 30.3, ISC DHCPv6 client version is upgraded to dhcp-4.4.1 to ensure that you are not running software with any known vulnerability.

Supported Platforms

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

Power over Ethernet (PoE) Optimization

For ExtremeXOS 30.3, Power over Ethernet (PoE) is optimized to provide power:

- (Fast PoE) When the switch is powered on without waiting for boot up based on last saved PoE state.
- (Perpetual PoE) Preserve PoE power delivery to devices during reboot.

Supported Platforms

ExtremeSwitching X465 series switches.

Limitations

For fast PoE, the following limitations apply:

- When saving PoE configurations to hardware, all current running PoE configurations must be saved and used for the next boot.
- The fast PoE feature can be enabled on a per switch basis only.
- If a switch has perpetual PoE enabled and you configure PoE, and then reboot the switch without saving the configuration, the hardware configuration shown in the CLI when the switch comes up does not reflect the real configurations saved in hardware. Under these circumstances, fast PoE will falsely report a mismatch between the configurations in hardware and the configuration file.
- When a different configuration file is selected for the next reboot by the `use configuration` command, and the PoE configurations in the new file are different from the current ones, fast PoE will report a mismatch between the configurations in hardware and the configuration file.

New CLI Commands

```
show inline-power fast ports {port_list}
```

Changed CLI Commands

Changes are underlined.

```
enable inline-power [fast | perpetual]
```

```
enable inline-power [fast | perpetual] slot slot
```

```
disable inline-power [fast | perpetual]
```

```
disable inline-power [fast | perpetual] slot slot
```

```
show inline-power [fast | perpetual] slot slot
```

```
show inline-power [fast | perpetual]
```

Bluetooth for ExtremeXOS

ExtremeXOS 30.3 introduces switch management using Bluetooth. You can connect to the switch and manage it using Bluetooth from mobile devices or laptops. Bluetooth is enabled by default.

Supported Platforms

Switches: ExtremeSwitching X465 series switches.

Adapters: Dongles with a common Bluetooth controller (Cypress CY20702). Vendors with CY20702 pluggable and CC&C (USB-BT-400).

Limitations

- Stacking with Bluetooth is not supported. Currently, access to a slot connected with a Bluetooth device is supported, but other slots cannot be accessed.
- No security procedures are initiated by ExtremeXOS for Bluetooth connectivity.
- Only a specific list of Bluetooth dongles is supported.
- Only one Bluetooth adapter is enabled per card. Other adapters will be in powered off state.

New CLI Commands

```
enable switch bluetooth {discovery | pairing }
```

```
disable switch bluetooth {discovery | pairing }
```

```
clear switch bluetooth device [all | address]
```

```
show switch bluetooth [statistics | inventory]
```

Extreme Insight for Guest Virtual Machines (VMs)

ExtremeXOS 30.3 introduces the Extreme Insight for guest virtual machines (VMs) feature, which provides the ability to host guest VMs on ExtremeXOS-based switches.

Extreme Insight requires a Core license. For more information about licenses, see the [ExtremeXOS 30.3 Feature License Requirements](#). The Extreme Insight feature also requires the Solid State Storage Device SSD-120 (see [New Hardware Supported in ExtremeXOS 30.3](#) on page 22).

Supported Platforms

ExtremeSwitching X465-24MU and X465-24MU-24W switches.

Limitations

- A switch supports a maximum of two virtual machines (VMs) running concurrently.
- A maximum of two CPU cores can be dedicated to VMs.
- Multiple guest VMs per Insight port is not supported.
- Stacking support is limited to running VMs on the master node of a stack.

VMs cannot be run on non-master stack nodes. The VMs do not migrate to backup with a failover. You will need to restore the original master as master to access your VMs again.

- Only OVA and qcow2 files are supported. Compatibility issues may occur when using third-party OVA files. The image format qcow2 is generally more reliable.
- You cannot rename a VM after creating it.

New CLI Commands

```
create vm vm_name ova ova_file {memory memory_size} {cpus num_cpus}
```

```
create vm vm_name image image_file {memory memory_size} {cpus num_cpus}
```

```
start vm vm_name
```

```
stop vm vm_name [forceful | graceful]
```

```

enable vm vm_name auto-start

disable vm vm_name auto-start

delete vm vm_name

configure vm vm_name {add | delete} ports portlist

configure vm vm_name cpus num_cpus

configure vm vm_name memory memory_size

clear vm storage

open vm vm_name {console}

show vm {vm_name | detail}

show vm vm_name guest interfaces

```

Changed CLI Commands

The following show commands display SSD-120 information:

```

show version {detail | process name | images {partition partition}}

show switch {detail}

show system

```

Network Time Protocol (NTP) Open Source Stack Upgraded

For ExtremeXOS 30.3, the Network Time Protocol (NTP) open source stack has been upgraded to version 4.2.8p12.

NetLogin MAC Authentication Case Option for User Name and Password

If a RADIUS server is case-sensitive and it expects the user name and password only in lowercase, then MAC Authentication will fail due to the case mismatch, because whenever a MAC address is used as user name and password, by default the MAC address is sent only in uppercase.

ExtremeXOS 30.3 provides an option to send the Network Login (NetLogin) MAC Authentication MAC address in either uppercase or lowercase for the user name or password.

This feature changes the ENTERASYS-MAC-AUTHENTICATION MIB by adding MIB object etsysMACAuthenticationSystemUserNameCase to the group etsysMACAuthenticationSystemGroup.

Supported Platforms

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

New CLI Commands

```
configure netlogin mac username case {lower | upper}
```

Strict Bidirectional Forwarding Detection (BFD) Session Protection for Static Routes

If the Bidirectional Forwarding Detection (BFD) session is down, but BFD protected static route is still in the routing table after reboot, the BFD session is never established, because during reboot, the BFD session is in the INIT state, and the static route is brought up without considering BFD session state. This situation can cause traffic loss since the link to the gateway actually is down. This command turns down the static route during reboot if BFD session is in the INIT state. By default, this feature is disabled, which is consistent with other BFD clients.

Supported Platforms

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

New CLI Commands

```
enable iproute {protection} bfd strict
```

```
disable iproute {protection} bfd strict
```

Changed CLI Commands

The following show command now shows the BFD strict session control status:

```
show iproute bfd
```

Extreme Discovery Protocol (EDP) Mismatched VLAN IDs Check

This feature detects mismatches when untagged ports are used in configurations where the port endpoints are used in VLANs that have different VLAN IDs. While this is not technically invalid, it nearly always indicates a mis-configuration. If a mismatched ID is detected, a log event is generated. The event is only generated once per boot. There is also a command to display port/VLAN ID endpoints for easy comparison.

Supported Platform

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

Changed CLI Commands

Changes are underlined.

```
show edp {ports [all | ports] {detail | vlan-id {mismatch {untagged}}  
{neighbor nbr}}
```

Hardware-Assisted Extreme Loop Recovery Protocol (ELRP)

Extreme Loop Recovery Protocol (ELRP) is a proprietary protocol that acts as a tool to detect network loops at Layer 2. ELRP sends a special protocol data unit (PDU) over the VLAN and detects a loop if the sender switch receives the same PDU back.

This enhancement to ELRP adds support for hardware-assisted ELRP, which allows ELRP to detect loops faster and to support more ELRP clients.

Supported Platforms

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

Limitations

For hardware-assisted ELRP:

- Only front panel ports can be configured as the loopback port.
- Only disabling ingress port is supported after a loop is detected.
- MLAG ports are not supported.
- Software ELRP and hardware-assisted ELRP cannot operate simultaneously.
- Only standalone clients are supported.
- Not supported on dynamic VLANs.
- Maximum loop detection interval is determined by the hardware capability of each platform. For most platforms, an ELRP packet is 70 bytes.
- Non-periodic requests are not supported.
- Extended Edge Switching is not supported.

New CLI Commands

```
configure elrp-client hardware-assist loopback-port [port | none]
```

Changed CLI Commands

Changes are underlined.

```
enable elrp-client {software | hardware-assist}
```

The following show command now displays hardware-assisted ELRP information:

```
show elrp
```

Link Layer Discovery Protocol (LLDP)-MED Policy Port Egress No Longer Required

Link Layer Discovery Protocol (LLDP)-MED policy is a functionality within LLDP to transmit network policy to media devices. Previously, LLDP-MED required you to configure a port to egress on a VLAN before LLDP-MED policy could be configured on that port and VLAN. This limitation forced the port to be configured statically before configuring LLDP. This limited what could be done with dynamic port configuration from features, such as Policy. LLDP now accepts LLDP-MED Policy configuration even when the port is not configured on the VLAN.

Supported Platforms

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

IP Multicast Stream Start-up Improvement

Previously, IP multicast high-volume stream start-up could result in a small amount of IP multicast traffic loss. This enhancement provide lossless IP multicast stream startup to existing subscribers, provided that the stream rate does not exceed the slowpath capacity of the switch.

Supported Platforms

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

Limitations

This enhancement applies only to “source-group-vlan” ipmc lookup-key mode (as seen in `show forwarding configuration`). If another mode is configured (for example, mac-vlan mode), the behavior should be unaffected.

Virtual Router and Forwarding (VRF) Information Added to Show Border Gateway Protocol (BGP) Route Commands

ExtremeXOS 30.3 adds virtual router and forwarding (VRF) information to show BGP route commands (see below).

Supported Platforms

Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X465, X590, X690, X870 series switches.

Changed CLI Commands

Changes are underlined>.

```
show bgp routes {address-family [ipv4-unicast | ipv4-multicast | ipv6-unicast | ipv6-multicast | vpn4 | ipv4-vxlan]} summary {vr vr_name}
```

```
show bgp routes {address-family [ipv4-unicast | ipv4-multicast | ipv6-unicast | ipv6-multicast | ipv4-vxlan | {l2vpn-evpn [inclusive-multicast | mac-ip]}]} {detail} [ipv4-vxlan | all | as-path path-expression | community [no-advertise | no-export | no-export-subconfed | number community_number | autonomous-system-idbgp-community] | network [any/netMaskLen | networkPrefixFilter] {exact}] {vr vr_name}
```

Revising CLI Commands

ExtremeXOS has evolved and incorporated many new features over time. During this development, CLI keywords have been introduced that are not logically organized or do not conform to the CLI format standards. This feature provides the infrastructure capability to manage the reorganization and removal of CLI commands with the goal of providing clearer CLI organization and improved usability.

The new `configure cli moved-keywords` command introduced in this feature provides a way to manage how old keywords that have been moved and redefined appear in the CLI. When you elect to show (with or without help text) old keywords in commands, they appear in syntax suggestion and completion (syntax helper). Also, if you use the old syntax, the command is executed, but a message prompts you to use the preferred new syntax.

Additionally, in ExtremeXOS 30.3, several commands have been revised to conform to consistent structural standards (see below).

Supported Platforms

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

New CLI Commands

```
configure cli moved-keywords [hide | show {no-help}]
```

Changed CLI Commands

The following show command displays moved CLI commands information:

```
show management
```

The following commands have been revised to conform to consistent structural standards.

Previous Syntax	Revised Syntax
enable clipaging	enable cli paging
disable clipaging	disable cli paging
enable xml-mode	enable cli xml-mode
disable xml-mode	disable cli xml-mode
enable idletimeout	enable cli idle-timeout
disable idletimeout	disable cli idle-timeout
enable cli-config-logging	enable cli config-logging
disable cli-config-logging	disable cli config-logging
configure safe-default-script	configure switch safe-default-script
virtual-router	Is hidden due to the more pervasive use of the vr keyword that performs the same function.

Dynamic Virtual Network

ExtremeXOS 30.3 introduces the ability to globally enable dynamic virtual network creation.

Note



When upgrading from ExtremeXOS 30.2 to ExtremeXOS 30.3, for Auto-peering, you must manually enable the dynamic VNET feature (see below command).

Dynamic VNET feature is enabled by default when you create Auto-peering in ExtremeXOS 30.3. However when using previously saved configuration files from ExtremeXOS 30.2, you must enable dynamic VNET manually. This is true even if you re-save the configuration with ExtremeXOS 30.3 installed.

Supported Platforms

Summit X670-G2, and ExtremeSwitching X465, X870, X690, X590 series switches.

New CLI Commands

```
configure virtual-network dynamic [on | off]
```

```
configure virtual-network vn_name name new_name
```

Changed CLI Commands

The output of the following show command displays whether automatic virtual network creation is turned on or off:

```
show virtual-network {vn_name | vxlan vni vni | [vlan vlan_name | vman vman_name] }
```

Ping Success Added for Policy-Based Redirection

ExtremeXOS now has a ping success count option for checking if a nexthop is up for policy-based redirection.

Supported Platforms

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

Changed CLI Commands

Changes are underlined.

```
configure flow-redirect flow_redirect_name nexthop ip_address ping  
health-check interval seconds miss number {success successes}
```

The following show command shows ping success information:

```
show flow-redirect {flow_redirect_name}
```

Fabric Attach Improvements

ExtremeXOS 30.3 now supports Fabric Attach client mode. Additionally, Fabric Attach server mode is supported over multi-switch link aggregation groups (MLAG).

Supported Platforms

For client mode: Summit X450-G2, X460-G2, X670-G2, X770, and ExtremeSwitching X440-G2, X465, X590, X620, X690, X870 series switches.

For server mode: Summit X670-G2, and ExtremeSwitching X465, X590, X690, X870 series switches.

New Hardware Supported in ExtremeXOS 30.3

ExtremeXOS 30.3 supports the following hardware:

Solid State Storage Device SSD-120 (p/n XN-SSD-01-120).

The SSD-120 is a solid state storage device that is required for the Extreme Insight for Guest Virtual Machines (VMs) feature (see [Extreme Insight for Guest Virtual Machines \(VMs\)](#) on page 15).

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 30.3 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 management information bases (MIBs) are located at www.extremenetworks.com/support/policies/mibs/.

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

For detailed information on which MIBs and SNMP traps are supported, see the *Extreme Networks Proprietary MIBs* and *MIB Support Details* sections in the [ExtremeXOS 30.3 User Guide](#).

Tested Third-Party Products

This section lists the third-party products tested for ExtremeXOS 30.3.

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 notifications about newly released software or technical service communications (for example, field notices, product change notices, etc.), register at:

www.extremenetworks.com/support/service-notification-form

2 Limits

This chapter summarizes the supported limits in ExtremeXOS 30.3.

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

- [Supported Limits for Edge License](#) on page 25
- [Supported Limits for Advanced Edge License](#) on page 51
- [Supported Limits for Core License](#) on page 58

For more information about licenses, see [ExtremeXOS 30.3 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 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	16
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, X590, X465	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, X590, X465	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
	ExtremeSwitching X590, X465	2,048 ingress only
Access lists (slices) —number of ACL slices.	Summit X460-G2, X450-G2	16 ingress 4 egress
	Summit X670-G2, ExtremeSwitching X690, X590, X465	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 X465, X620, X440-G2, X870, X690, X590	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, X590, X465	16
ACL port ranges	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	32

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Meters Packets-Per-Second Capable	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	Yes
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 X590, 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, X590, X465 (default timers—1 sec)	512
	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X440-G2, X620, X870, X690, X590, X465 (minimal timers—100 msec)	10 ^c
BFD IPv4 sessions (Hardware Assisted) —maximum number of IPv4 BFD sessions.	Summit X460-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X465, X620, X870, X690, X590	8
BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per VLAN.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X465, X620, X870, X690, X590	8
BOOTP/DHCP relay —maximum number of DHCPv4/v6 relay agents.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X465, X620, X870, X690, X590	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, X590, X465	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, X590, X465	256

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
CFM—maximum number of CFM up endpoints. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	32
CFM—maximum number of CFM down endpoints. Note: With Advanced Edge license or higher.	Summit X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465 Summit X460-G2	32 256 (non-load shared ports) 32 (load shared ports)
CFM—maximum number of CFM remote endpoints per up/down endpoint. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	2,000
CFM—maximum number of dot1ag ports. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	128
CFM—maximum number of CFM segments. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	1,000
CFM—maximum number of MIPs. Note: With Advanced Edge license or higher.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	256
CLEAR-Flow—total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs.	Summit X460-G2, X670-G2, X450-G2	4,094
	ExtremeSwitching X440-G2, X620	1,024
	ExtremeSwitching X870	3,072
	ExtremeSwitching X690, X590, X465	8,192
Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)—maximum number of DCBX application TLVs.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	8

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
DHCPv6 Prefix Delegation Snooping —Maximum number of DHCPv6 prefix delegation snooped entries.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	256 (with Underlying Protocol Ripng) 128 (with Underlying protocol OSPFv3) 1,024 (with static routes)
DHCP snooping entries —maximum number of DHCP snooping entries.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	2,048
Dynamic ACLs —maximum number of ACLs processed per second. Note: Limits are load dependent.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465 with 50 DACLs with 500 DACLs	10 5
EAPS domains —maximum number of EAPS domains. Note: An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains. Note: You can increase the number of domains by upgrading to the Advanced Edge license.	Summit X670-G2, X450-G2, X460-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	4
EAPSV1 protected VLANs —maximum number of protected VLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2 ExtremeSwitching X870, X690, X590, X465	1,000 2,000
ERPS domains —maximum number of ERPS domains with or without CFM configured. Note: You can increase the number of domains by upgrading to the Advanced Edge license.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	4
ERPSV1 protected VLANs —maximum number of protected VLANs.	ExtremeSwitching X870, X690, X590, X465 Summit X450-G2, X460-G2, X670-G2, 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, X590, X465 ExtremeSwitching X620, X440-G2	2,000 500

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
ELSM (vlan-ports) —maximum number of VLAN ports.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X870, X690, X590, X465	5,000
	ExtremeSwitching X440-G2	4,000
Extended Edge Switching maximum BPEs —maximum number of attached bridge port extenders (BPEs).	Summit X670-G2, ExtremeSwitching X690, X590, X465	48
Extended Edge Switching maximum cascade ports —maximum number of upstream ports on bridge port extenders (BPEs).	Summit X670-G2, ExtremeSwitching X690, X590, X465	2 on V400-24 models 4 on V400-48 models
Extended Edge Switching maximum tiers —maximum number of cascade levels (tiers) of bridge port extenders (BPEs).	Summit X670-G2, ExtremeSwitching X465, X690, X590	4
Extended Edge Switching VLAN+ port memberships —maximum number of VLAN+ (extended) port memberships.	Summit X670-G2, ExtremeSwitching X690, X590, X465	12,000 in hash mode (default) 131,000 in port-group mode
Forwarding rate —maximum L3 software forwarding rate.	ExtremeSwitching X690, X590, X465	30,000 pps
	ExtremeSwitching X870	32,000 pps
	Summit X450-G2	16,000 pps
	Summit X460-G2	17,000 pps
	ExtremeSwitching X620	10,000 pps
	Summit X670-G2	15,000 pps
	ExtremeSwitching X440-G2	9,000 pps
FDB (unicast blackhole entries) —maximum number of unicast blackhole FDB entries.	Summit X460-G2	49,152 ^f
	Summit X670-G2	294,912 ^f
	Summit X450-G2	34,816 ^f
	ExtremeSwitching X620, X440-G2	16,384 ^f
	ExtremeSwitching X870	139,264 ^f
	ExtremeSwitching X690, X590, X465	278,528 ^f
FDB (multicast blackhole entries) —maximum number of multicast blackhole FDB entries.	Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	1,024
	Summit X670-G2, ExtremeSwitching X870, X690, X590, X465	4,096

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
FDB (maximum L2 entries)—maximum number of MAC addresses.	Summit X460-G2	98,300 ⁹
	Summit X670-G2	294,912 ⁹
	Summit X450-G2	68,000 ⁹
	ExtremeSwitching X620, X440-G2	16,384
	ExtremeSwitching X870	139,264 ⁹
	ExtremeSwitching X690, X590, X465	278,528 ⁹
FDB (Maximum L2 entries)—maximum number of multicast FDB entries.	Summit X670-G2, ExtremeSwitching X870, X690, X590, X465	4,096
	Summit X450-G2, X460-G2, and ExtremeSwitching X620, X440-G2	1,024
Identity management—maximum number of Blacklist entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	512
Identity management—maximum number of Whitelist entries.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590, X465	64
Identity management—maximum role hierarchy depth allowed.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	5
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, X590, X465	16
Identity management—maximum number of child roles for a role.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	20
Identity management—maximum database memory size.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	512

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Identity management —recommended number of identities per switch. Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590, X465	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, X590, X465	500
IGMP snooping per VLAN filters —maximum number of VLANs supported in per-VLAN IGMP snooping mode.	Summit X460-G2, ExtremeSwitching X870	1,500
	Summit X450-G2	2,048
	Summit X670-G2	2,000
	ExtremeSwitching X620, X440-G2	1,000
	ExtremeSwitching X690, X590, X465	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, X590, X465	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, X590, X465	50
IGMPv2 subscriber —maximum number of IGMPv2 subscribers per port. ¹	Summit X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690, X590, X465	4,000
IGMPv2 subscriber —maximum number of IGMPv2 subscribers per switch. ¹	Summit X670-G2	30,000
	Summit X460-G2, X450-G2	20,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X465, X870, X690, X590	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, X590, X465	250
IGMPv3 subscriber —maximum number of IGMPv3 subscribers per port. ¹	Summit X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X440-G2, X620	3,500
	ExtremeSwitching X870, X690, X590, X465	4,000

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
IGMPv3 subscriber —maximum number of IGMPv3 subscribers per switch. ⁿ	Summit X460-G2, X450-G2	20,000
	Summit X670-G2	30,000
	ExtremeSwitching X620, X440-G2	17,500
	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	119,000 (up to) ^h
IPv4 ARP entries in hardware with maximum LPM routes —maximum recommended number of IPv4 ARP entries in hardware, with maximum LPM routes present. Assumes number of IP route reserved entries is “maximum.”	ExtremeSwitching 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, X590, X465	109,000 (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, X590, X465	N/A

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
IPv4 remote hosts in hardware with zero LPM routes—maximum recommended number of IPv4 remote hosts (hosts reachable through a gateway) in hardware when LPM routing is not used. Assumes number of IP route reserved entries is 0, and number of IPv4 ARP entries present is 100 or less.	ExtremeSwitching X870	120,000 (up to) ^h
	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	255
IPv6 addresses on a switch—maximum number of IPv6 addresses on a switch.	Summit X670-G2, X460-G2, X450-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	24,500 ^h
	ExtremeSwitching X870	22,000 ^h

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	1,024
IP unicast static routes —maximum number of permanent IP unicast routes.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690, X590, X465	1,024
	ExtremeSwitching X620, X440-G2	480
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, X590, X465	2, 4, 8, 16, 32, or 64
	ExtremeSwitching X440-G2	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, X590, X465		
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 30.3 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, X590, X465	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, X590, X465	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, X590, X465 Summit X450-G2, and ExtremeSwitching X620, X440-G2	16 N/A
L2 VPN: VPLS MAC addresses —maximum number of MAC addresses learned by a switch.	Summit X670-G2, ExtremeSwitching X690, X590, X465 Summit X460-G2 ExtremeSwitching X870 Summit X450-G2, and ExtremeSwitching X620, X440-G2	140,000 55,000 65,000 N/A
L2 VPN: VPLS VPNs —maximum number of VPLS virtual private networks per switch.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465 Summit X450-G2, and ExtremeSwitching X620, X440-G2	1,023 N/A
L2 VPN: VPLS peers —maximum number of VPLS peers per VPLS instance.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465 Summit X450-G2, and ExtremeSwitching X620, X440-G2	64 N/A
L2 VPN: LDP pseudowires —maximum number of pseudowires per switch.	Summit X670-G2, X460-G2, and ExtremeSwitching X870, X690, X590, X465 Summit X450-G2, and ExtremeSwitching X620, X440-G2	7,000 N/A
L2 VPN: static pseudowires —maximum number of static pseudowires per switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465 Summit X450-G2, and ExtremeSwitching X620, X440-G2	7,000 N/A
L2 VPN: Virtual Private Wire Service (VPWS) VPNs —maximum number of virtual private networks per switch.	Summit X670-G2, ExtremeSwitching X870, X690, X590, X465 Summit X460-G2 Summit X450-G2, and ExtremeSwitching X620, X440-G2	4,090 1,023 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 "l2-and-l3". 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, X590, X465	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 l3-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, X590, X465	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 l3-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, X590, X465	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, X590, X465	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, X590, X465	32
	For stacked: Summit X670-G2, X460-G2, X450-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590 , X465	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, X590, X465 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 you to use a total of four slots, while there are no more than two egress instances. The maximum possible combination for mirroring instances: 1 4 ingress 2 3 ingress + 1 egress 3 2 ingress + 2 egress 4 2 (ingress + egress) 5 1 (ingress + egress) + 2 ingress 6 1 (ingress + egress) + 1 egress + 1 ingress	16 (including default mirroring instance)
	ExtremeSwitching 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, X590, X465	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, X590, X465	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, X590, X465	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
	ExtremeSwitching X590, X465	35

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, X590, X465	2
MPLS RSVP-TE interfaces —maximum number of interfaces.	Summit X460-G2, X670-G2, ExtremeSwitching X590, X465, X870 Summit X450-G2, and ExtremeSwitching X440-G2, X620	32 N/A
MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X590, X690, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620 X590, X465	2,000 N/A
MPLS RSVP-TE egress LSPs —maximum number of egress LSPs.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620	2,000 N/A
MPLS RSVP-TE transit LSPs —maximum number of transit LSPs.	Summit X460-G2, X670-G2 ExtremeSwitching X870, X690 X590,, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620	2,000 4,000 N/A
MPLS RSVP-TE paths —maximum number of paths.	Summit X460-G2 Summit X670-G2, ExtremeSwitching X870, X690 X590,, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620	1,000 2,000 N/A
MPLS RSVP-TE profiles —maximum number of profiles.	Summit X460-G2 Summit X670-G2, ExtremeSwitching X870, X690 X590,, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620	1,000 2,000 N/A
MPLS RSVP-TE EROs —maximum number of EROs per path.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690 X590,, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620	64 N/A
MPLS LDP peers —maximum number of MPLS LDP peers per switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690 X590,, X465 Summit X450-G2, and ExtremeSwitching X440-G2, X620	128 N/A

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
MPLS LDP adjacencies—maximum number of MPLS LDP adjacencies per switch.	Summit X460-G2	50
	Summit X670-G2, ExtremeSwitching X870, X690 X590,, X465	64
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
MPLS LDP ingress LSPs—maximum number of MPLS LSPs that can originate from a switch.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690 X590,, X465	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 X590,, X465	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 X590,, X465	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 X590,, X465	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, X590,, X465, 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 X590,, X465	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 X590,, X465	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, X450-G2	768
	ExtremeSwitching X870	508
	ExtremeSwitching X620, X440-G2	256
	ExtremeSwitching X690, X590, X465	1,500

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
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, X590, X465	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, X590, X465	45,000
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per port. ¹	Summit X670-G2, X460-G2, X450-G2	4,000
	ExtremeSwitching X620, X440-G2	3,500
	ExtremeSwitching X870, X690, X590, X465	4,000
Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per switch. ¹	Summit X670-G2	30,000
	Summit X460-G2, X450-G2, ExtremeSwitching X620, X440-G2	10,000
	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	1,024
	Summit X450-G2, X460-G2, ExtremeSwitching X590, X465	1,024
Network Login —maximum number of clients being authenticated with policy mode enabled with TCI overwrite enabled.	Summit X670-G2, ExtremeSwitching X870, X690	512
	ExtremeSwitching X620, X440-G2	256
	Summit X460-G2, X450-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	2,000
Network Login —maximum number of dynamic VLANs.	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	10

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
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, X590, X465	94
Node Alias —maximum number of entries per slot.	Summit X450-G2, X460-G2, X670-G2 and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590, X465	63
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 X465, X690, X590	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, and ExtremeSwitching X590, X465	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.	ExtremeSwitching X690, X590, X465	24,576
	Summit X670-G2, X460-G2, ExtremeSwitching X870	12,288
	Summit X450-G2	6,144
	ExtremeSwitching X620, X440-G2	1,536
Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	Stacking	1,536–65,534

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port per switch with TCI overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table.	Summit X450-G2	6,144
	Summit 460-G2, X670-G2, and ExtremeSwitching X870	12,288
	ExtremeSwitching X690, X590, X465	24,576
	ExtremeSwitching X440-G2, X620	1,536
ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port with only with TCI-Overwrite enabled.	Summit X450-G2, X460-G2, ExtremeSwitching X590, X465	1,024
	Summit X670-G2, ExtremeSwitching X870, X690	512
	ExtremeSwitching X620, X440-G2	256
ONEPolicy Permit/Deny Traffic Classification Rules Types —total maximum number of unique permit/deny traffic classification rules types (system/stack).	Summit X450-G2, X460-G2, X670-G2, ExtremeSwitching X870	952
	ExtremeSwitching X620, X440-G2	440
	ExtremeSwitching X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	256 ^o
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, X590, X465	32 ^o

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
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
	ExtremeSwitching X590, X465	31
Private VLANs —maximum number of private VLANs with an IP address on the network VLAN. Note: This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X465, X620, X870, X690, X590	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, X465, X620, X870, X690, X590	N/A

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
PTP/1588v2 Unicast Static Slaves	Summit X670-G2, X460-G2	40 entries per clock port
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590	N/A
PTP/1588v2 Unicast Static Masters	Summit X670-G2, X460-G2	10 entries per clock type
	ExtremeSwitching X440-G2, X465, X620, X870, X690, X590	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, X590, X465	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, X590 , X465	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, X590 , X465	256
	ExtremeSwitching X440-G2, X620	128
RIPng learned routes —maximum number of RIPng routes.	Summit X670-G2, X460-G2, X450-G2, X870, X690, X590 , X465	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, X590 , X465	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, X590 , X465	384
Spanning Tree —maximum number of multiple spanning tree instances (MSTI) domains.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X870, X690, X590 , X465	64
	ExtremeSwitching X440-G2	32

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
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, X590 , X465	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, X590 , X465	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, X590 , X465	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, X590, X465	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, X590, X465	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, X590, X465	8
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, X590, X465	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, X590, X465	16
Syslog targets —maximum number of configurable Syslog targets.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590 , X465	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, X590 , X465	63
	ExtremeSwitching X440-G2, X620	16 (local-only VRs)
Virtual router forwarding (VRFs) —maximum number of VRFs that can be created on a switch. Note: * Subject to other system limitations.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690, X590 , X465	960 *
	ExtremeSwitching X440-G2, X620	16 (local-only VRFs)

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
Virtual router protocols per VR— maximum number of routing protocols per VR.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690, X590 , X465	8
	ExtremeSwitching X440-G2, X620	N/A
Virtual router protocols per switch— maximum number of VR protocols per switch.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690, X590 , X465	64
	ExtremeSwitching X440-G2, X620	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, X590 , X465	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, X590 , X465	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, X590 , X465	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, X590, X465	2,048
	ExtremeSwitching X440-G2, X620	510
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, X590 , X465	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, X590 , X465	16

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
VLAN translation —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN.	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
	ExtremeSwitching X590, X465	31
VLAN translation —maximum number of translation VLAN pairs with an IP address on the translation VLAN. Note: This limit is dependent on the maximum number of translation VLAN pairs in an L2-only environment if the configuration includes tagged and translated ports.	Summit X670-G2, ExtremeSwitching X465, X870, X690, X590	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, X590, X465	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, X590, X465	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, X590, X465	2,048
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	1,024
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, X590, X465	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, X590, X465	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, X590, X465	2,048

Table 4: Supported Limits for Edge License (continued)

Metric	Product	Limit
XNV local VPPs—maximum number of XNV local VPPs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	64
BGP auto-peering attached IPv4 hosts—maximum number of attached IPv4 hosts.	Summit X670-G2 ExtremeSwitching X870, X690, X590, X465	16,000 64,000
BGP auto-peering attached IPv6 hosts—maximum number of attached IPv6 hosts.	Summit X670-G2 ExtremeSwitching X870, X690, X590, X465	254 8,000
BGP auto-peering ECMP—maximum number of equal cost multipath for auto-peering. Note: * Subject to the limitation imposed by the number of physical ports on a switch.	Summit X670-G2, ExtremeSwitching X690, X870, X590, X465	16*
BGP auto-peering maximum IPv4 prefixes with ECMP—Maximum number of IPv4 Network prefixes with ECMP.	Summit X670-G2, ExtremeSwitching X690, X870, X590, X465	64,000
BGP auto-peering maximum IPv6 prefixes with ECMP—Maximum number of IPv6 Network prefixes with ECMP.	Summit X670-G2, ExtremeSwitching X690, X870, X590, X465	8,000
BGP auto-peering MLAG peers—maximum MLAG peers per AutoBGP node.	Summit X670-G2, ExtremeSwitching X690, X870, X590, X465	1

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

Metric	Product	Limit
BGP auto-peering VRFs —maximum number of VRFs.	Summit X670-G2, ExtremeSwitching X690, X870, X590, X465	64
BGP auto-peering EVPN instances —maximum EVPN instances.	Summit X670-G2, ExtremeSwitching X690, X870, X590, X465	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, X590, X465 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, X590, X465	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, X590, X465	32
ERPS domains —maximum number of ERPS domains with CFM configured.	Summit X450-G2, X670-G2, and ExtremeSwitching X620, X870, X690, X590, X465 Summit X460-G2	16 32
ERPSv1 protected VLANs —maximum number of protected VLANs.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465 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, X590, X465 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, X590, X465	32
ESRP domains —maximum number of ESRP domains.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	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, X590, X465	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, X590, X465	511

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

Metric	Product	Limit
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, X590, X465	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, X590, X465	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, X590, X465	1
OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	4
OSPFv2 links —maximum number of links in the router LSA.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	400
	Summit X450-G2, and ExtremeSwitching X620, X440-G2	4
OSPFv2 neighbors —maximum number of supported OSPF adjacencies.	Summit X450-G2, X670-G2, X460-G2, and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465	4

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

Metric	Product	Limit
OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	4
OSPFv3 neighbors—maximum number of OSPFv3 neighbors.	Summit X450-G2, X670-G2, X460-G2, ExtremeSwitching X870, X690, X440-G2, X620, X590, X465	4
OSPFv3 virtual links—maximum number of OSPFv3 virtual links supported.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	8
	Summit X450-G2	N/A
OVSDB Managed Switches—Maximum number of OVSDB-managed switches.	Summit X670-G2, ExtremeSwitching X870, X690, X590, X465	1
	Summit 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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	145
PIM IPv4 Limits —static rendezvous points.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	32
PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X440-G2, X620, X690, X590, X465	4
PIM IPv6 Limits —maximum number of multicast sources per group.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	64
PIM IPv6 Limits —maximum number of secondary addresses per interface.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	70
PIM IPv6 Limits —static rendezvous points.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X620, X440-G2, X870, X690, X590, X465	32

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

Metric	Product	Limit
Port-specific VLAN tags—maximum number of port-specific VLAN tags.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	1,023
	Summit X450-G2, and ExtremeSwitching X440-G2, X620	N/A
Port-specific VLAN tags—maximum number of port-specific VLAN tag ports.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	511
	ExtremeSwitching X440-G2, X620	128
	Scaled Mode (with groups): Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	511
	ExtremeSwitching X440-G2, X620	128
	Scaled Mode (with groups): Summit X670-G2, X460-G2, X450-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465 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 VRIDs per VLAN)—maximum number of VRIDs per VLAN.	Summit X670-G2, X460-G2, X450-G2 and ExtremeSwitching X440-G2, X620, X870, X690, X590, X465 Note: With Advanced Edge license or higher.	255
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, X590, X465 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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465 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, X590, X465 Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	4,096 N/A

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

Metric	Product	Limit
VXLAN —maximum static MAC to IP bindings. Note: Every FDB entry configured reduces this limit by 1.	Summit X670-G2, and ExtremeSwitching X870, X690, X590, X465	64,000
	Summit X460-G2, X450-G2, and ExtremeSwitching X440-G2, X620	N/A
VXLAN —maximum RTEP IP addresses	Summit X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	256
	Summit X450-G2	204
BGP (networks) —maximum number of BGP networks.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	300
	Summit X450-G2	100
BGP (peer groups) —maximum number of BGP peer groups.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	64
	Summit X450-G2	50

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
BGP (policy entries) —maximum number of BGP policy entries per route policy.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	25,000
	Summit X450-G2	20,000
BGP (unicast address-family routes) —maximum number of unicast address-family routes.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465 (at default)	25,000
	ExtremeSwitching X870, X690, X590, X465 (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, X590, X465	25,000
	Summit X450-G2	20,000
BGP ECMP —maximum number of equal cost paths per multipath for BGP and BGPv6.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	24,000
	Summit X450-G2	14,000
EVPN EVI instances —maximum number of EVI instances.	Summit X670-G2, ExtremeSwitching X870, X690, X590, X465	1,024
EVPN LAGs —maximum number of LAGs.	Summit X670-G2, ExtremeSwitching X870, X690, X590, X465	128

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
GRE Tunnels —maximum number of GRE tunnels.	Summit X460-G2, X670-G2, X450-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	128
	Summit X450-G2	N/A
IS-IS ECMP —maximum number of equal cost paths per multipath for IS-IS.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	256
	Summit X450-G2	N/A
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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	10,000
	Summit X450-G2	N/A

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
IS-IS IPv6 L2 routes —recommended maximum number of IS-IS Level 2 routes.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	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, X590, X465	64
MSDP SA cache entries —maximum number of entries in SA cache.	Summit X670-G2, ExtremeSwitching X690, X590, X465	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, X590, X465	16
OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3.	Summit X460-G2, X670-G2, X450-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	8

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
OSPFv2 external routes—recommended maximum number of external routes contained in an OSPF LSDB.	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	400
	Summit X450-G2	320
OSPFv2 links—maximum number of links in the router LSA.	Summit X460-G2, X670-G2, ExtremeSwitching X870, X690, X590, X465	400
	Summit X450-G2	320
OSPFv2 neighbors—maximum number of supported OSPF adjacencies.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465	128
	Summit X450-G2	96
OSPFv2 routers in a single area—recommended maximum number of routers in a single OSPF area.	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	32
	Summit X450-G2	25
OSPFv3 areas—as an ABR, the maximum number of supported OSPFv3 areas.	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	10,000
	Summit X450-G2	7,500

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
OSPFv3 inter- or intra-area routes—recommended maximum number of inter- or intra-area routes.	ExtremeSwitching X870, X690, X590, X465	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, X590, X465	256
	Summit X450-G2	192
OSPFv3 neighbors—maximum number of OSPFv3 neighbors.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465	64
	Summit X450-G2	48
OSPFv3 virtual links—maximum number of OSPFv3 virtual links supported.	Summit X670-G2, X460-G2, ExtremeSwitching X870, X690, X590, X465	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, X590, X465	255
PIM IPv4 Limits—maximum number of multicast groups per dynamic rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	180
PIM IPv4 Limits—maximum number of multicast groups per static rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590, X465	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, X590, X465	145
PIM IPv4 Limits—static rendezvous points.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	32
PIM IPv6 (maximum interfaces)—maximum number of PIM active interfaces.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	255
PIM IPv6 Limits—maximum number of multicast sources per group.	Summit X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	1,750
	Summit X450-G2,	1,500

Table 6: Supported Limits for Core License (continued)

Metric	Product	Limit
PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590 , X465	70
PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590, X465	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, X590 , X465	64
PIM IPv6 Limits —maximum number of secondary addresses per interface.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590 , X465	70
PIM IPv6 Limits —static rendezvous points.	Summit X450-G2, X460-G2, X670-G2, and ExtremeSwitching X870, X690, X590 , X465	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 are lessened accordingly.

^o The total of all PBR next hops on all flow redirects should not exceed 4,096.

^p The number of XNV authentications supported based on system ACL limitations.

^q Based on "configure forwarding internal-tables more routes".

^r Based on `configure forwarding internal-tables more routes ipv6-mask-length 128`.

3 Open Issues, Known Behaviors, and Resolved Issues

Open Issues Known Behaviors Resolved Issues in ExtremeXOS 30.3

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 30.3.

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

CR Number	Description
General	
xos0076126	Netlogin web in policy mode does not resolve the login page on DNS cache enabled VLANs. A "Page Not Found" Error appears.
xos0076221	On an unconfigured switch running ExtremeXOS 30.3, there is an issue with ZTP+ connecting to Extreme Management Center (XMC) on the management port (Mgmt VR). Workaround: Configure option 43 with a TRAP IP address on the DHCP server.
ExtremeSwitching X465 Series Switches	
xos0075819	1. With Fast PoE disabled, a mismatch of operator limits occur between hardware and configured states in ExtremeSwitching X465 series switches when running the <code>show inline-power fast ports {port_list}</code> command. 2. With Fast PoE enabled/disabled, a mismatch of state occurs between hardware and configured states on ExtremeSwitching X465 series switches when running the <code>show inline-power fast ports {port_list}</code> command.
Extended Edge Switching	
xos0074983	SLLP guard is not disabling the VPLAG master port if the SLPP PDU is received on its member port. It disables the member port only. Also, in the <code>show port</code> command, the disabled port's status does not have a "D" Flag. Only the link status appears with an 'R' flag.
xos0075777	When inline power is disabled, and then enabled, on bridge port extender (BPE) ports, it takes 10-20 seconds for updated information to appear in the output of the <code>show inline-power stats</code> command.

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

CR Number	Description
xos0076077	<p>With orchestration mode enabled on Extended Edge Switching redundant (MLAG) controlling bridges (CBs), when running the commands <code>disable/enable inline-power port</code>, the correct port state does not appear in the output of the <code>show inline-power</code> command of the backup CB.</p> <p>Workaround: Run <code>disable/enable inline-power port</code> commands on both CBs to see correct port information.</p>
Insight for Guest Virtual Machines	
xos0075406	<p>The commands <code>show cpu-monitoring</code>, <code>show memory</code>, etc. do not show memory/CPU usage for guest virtual machines (VMs). It shows usage for virtMgr, which is always low, since it only deals with a few minor tasks, such as VM autostart, handling VM related CLI, etc.</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	
xos0075321	<p>DNS cache entries are not removed even after TTL expiry. New cache entry creation is not affected since entries are removed whenever a new query is received for those addresses. However, this may make the DNS cache size unwieldy.</p> <p>Workaround: If the DNS cache become too large, use the command <code>clear dns cache</code> to clear it.</p>
Extended Edge Switching	
xos0075684	<p>Neither <code>show qosmonitor congestion</code> nor <code>show port congestion</code> increments when there is egress congestion on a V300 bridge port extender port. Instead, you can view egress congestion using <code>show ports rxerrors</code> on the ingress port (upstream port in many cases).</p>
Fabric Attach	
xos0076156	<p>When Fabric Attach authentication is configured on ports that are part of an MLAG, all ports on that MLAG must have the same Fabric Attach authentication configuration.</p>
Insight for Guest Virtual Machines	
xos0075069	<p>You cannot access the serial console before starting a VM.</p> <p>Workaround: You must start the VM, and then reboot it to gain serial console access.</p>

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

CR Number	Description
xos0075388	For ExtremeSwitching X465 series switches, having an SSD-120 device inserted increases the boot time by approximately 28 seconds.
xos0075211	With the Insight for guest virtual machines feature, compatibility issues may occur when using third-party OVA files. Workaround: Use the image format qcow2, since it is generally more reliable.
MAC Security (MACsec)	
xos0073350	Hot swapping LRM/MACsec Adapters is not supported. Workaround: MACsec must be disabled before a corresponding LRM/MACsec Adapter is hot swapped.
xos0076204	LRM/MACsec Adapter initialization might take an extended amount of time—about 40–85 seconds per adapter, plus 15–35 seconds per transceiver depending upon the platform type used with the adapter.
Security	
xos0075074	On ExtremeSwitching X440-G2 and X620 series switches, when DNS cache is enabled and operational on at least one VLAN, the nmap shows ports as open or filtered.

Resolved Issues in ExtremeXOS 30.3

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

CR Number	Description
General	
xos0069194	Packets with size greater than the configured IP-MTU value are forwarded if jumbo frames is enabled and ARP is resolved.
xos0069987	HAL process ends unexpectedly with signal 11 when executing the command that fetches entries from hardware.
xos0072228	Interface flags in the <code>show ipconfig</code> output do not match the flag values in the <code>show ipconfig vlan-name</code> output.

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.3 (continued)

CR Number	Description
xos0073899	LACP sharing enabled port are added to link aggregator even though port speeds are different.
xos0074117	When a network is unreachable, ICMPv6 destination unreachable packets are not returned and IPv6 "InNoRoutes", ICMPv6 "DestUnreachs" Out counters are not incremented as shown in the <code>show ipstats ipv6 vlan</code> command.
xos0074200	The OPNEXT transceiver device does not link reliably on ExtremeSwitching X690, X590, and X465 series switches.
xos0074661	The commands <code>enable switch usb</code> and <code>disable switch usb</code> stopped working in the ExtremeXOS 30.1 release.
xos0074702	Zero Touch Provisioning (ZTP) does not work over the Management interface.
xos0074751	The command <code>clear port <port_list> rate-limit flood out-of-profile status</code> should clear status only.
xos0074871	EMS log message should be generated when a port cannot be added to a VLAN.
xos0074872	When limit learning is configured on one VLAN, FDB entries on another VLAN are flushed from hardware.
xos0074874	Need to permit the use of few special characters for SysName/SysLocation/SysContact.
xos0074933	Dynamic VLANs created by MVRP on MLAG ports flap continuously when the ports are in the down state.
xos0075012	Need additional configurable option for success count in flow-redirect health check command.
xos0075021	HAL process ends unexpectedly when unsupported optics are inserted into the switch.
xos0075096	SNMPwalk does not return "partinfo" of all fans present in the switch.
xos0075175	After reboot, ports are sometimes not added to the aggregator.
xos0075202	Saving the configuration is failing due to IPFIX process.
xos0075213	If the debug command <code>debug hal show ipv4Adj</code> is interrupted using "Q" or Ctrl-C before all adjacencies appear, then subsequent Layer 3 hardware updates do not occur. Reboot is necessary to recover.
xos0075263	In stacking, LACP ports present in back-up slot are removed/re-added when PSTAG is configured.
xos0075283	Enabling NTP from within the VRF is allowed even though it is not supported.
xos0075433	Ethernet OAM Rx packet counter does not increment on ExtremeSwitching X465, X590, X690, and X870 series switches.
xos0075483	The process <code>cfgmgr</code> ends unexpectedly when executing another <code>save</code> command after a failing first <code>save</code> command.
xos0075510	Need to add success option under to command <code>configure flow-redirect next-hop</code> in the ExtremeXOS documentation.
xos0075937	Executing Python script produces an ImportError error message when importing files from same directory.

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.3 (continued)

CR Number	Description
ExtremeSwitching X465 Series Switches	
xos0074426	On ExtremeSwitching X465 series switches with 60W and 90W PoE ports, front panel ports do not match the port numbering on the PoE board. The port number pairs are swapped. The default disconnect precedence is 'deny port' where the highest numbered ports are denied power when the switch's allocated power exceeds its PoE budget.
xos0075001	When a slot on a X465 stack with 25G VIM is unconfigured, the ports come up in 40G mode and errors are logged.
xos0075191	Layer 2 traffic is not forwarded through the redundant ports between ExtremeSwitching X465 stack and X465 standalone switch.
ExtremeSwitching X690 Series Switches	
xos0073818	Packets originating in a switch fail to egress after removing the ports from service VLAN.
ExtremeSwitching X870 Series Switches	
xos0073426	Unable to configure FEC on X870-96x-8c switch on ports with 100G capability enabled through a license.
ExtremeSwitching X440-G2 Series Switches	
xos0075020	Switch takes around 30 seconds to bring up all ports, which is triggering multiple STP topology changes.
xos0075030	On ExtremeSwitching X440-G2 48-port switches, ACL hardware full errors occur when Extreme Management Center (XMC) is used to push policy and telemetry.
xos0075129	IPv6 MLD packet filter installation fails in ACL double-width mode.
xos0075492	ExtremeSwitching X440-G2 series switches PoE virtual temperature sensor model algorithm needs correction.
Summit X460-G2 Series Switches	
xos0075787	Port stays in the loop-back state after upgrading the standalone switch to stack.
ACL	
xos0074626	In Policy, traffic is flooded on ports even after removed from the redirect-port-list action modifier.
xos0075854	If "ipmcforwarding ipv6" is enabled, then the installation of an ACL with "arp-sender-address" match condition fails.
AVB	
xos0075529	Member port of a share group becomes AVB-incapable after tearing down the share group and re-creating it.
Clocking	
xos0075437	Random values are added to GTP packets.
ELRP	
xos0074513	Ports disabled by ELRP due to a loop in the dynamic VLAN of NetLogin is not automatically re-enabled after timer expiry.

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.3 (continued)

CR Number	Description
EVPN	
xos0071878	<p>With Auto-peering/EVPN configuration, upgrading to ExtremeXOS 30.x from releases earlier than 30.1 produces error messages that are actually informational:</p> <pre>04/19/2018 08:58:47.57 <Error:FDB.ArpError> ipv6_neighbour_conf_t_set# Error Ignoring user VR(vrid-3) IPv6 neighbor pending entries (1024) 04/19/2018 08:58:47.57 <Error:FDB.ArpError> ipv6_neighbour_conf_t_set# Error vr-purple - Ignoring IPv6 Neighbour entries (4096) 04/19/2018 08:58:47.48 <Error:FDB.ArpError> arp_config_t_set# Error Ignoring user VR(vrid-3) ARP proxy entries (256) 04/19/2018 08:58:47.48 <Error:FDB.ArpError> arp_config_t_set# Error Ignoring user VR(vrid-3) ARP pending entries (256) 04/19/2018 08:58:47.48 <Error:FDB.ArpError> arp_config_t_set# Error vr-purple - Ignoring ARP entries (8192)</pre> <p>These messages inform you that user-VR based ARP limits configured in previous versions of ExtremeXOS are ignored from 30.x onward, and that ARP limits are derived from global configured ARP limits.</p>
Extended Edge Switching	
xos0073946	On Extended Edge Switching controlling bridge (CB) switches, the <code>show inline-power stats</code> command takes longer than usual to display the output, and sometimes it returns "Timeout occurred while retrieving information from hardware." messages.
xos0075689	Switch becomes unresponsive for 5-15 minutes when UPM executes command in orchestration mode on both MLAG controlling bridges.
MAC Security (MACsec)	
xos0075817	Incorrect error message appears when an ASCII string without 0x prefix is configured as the CAK.
xos0075837	If you use an <code>.xsf</code> script file to apply MACsec configuration and the commands to configure the optional MACsec parameters (include-sci, mka actor-priority, etc.) are listed before the command to enable MACsec, these optional MACsec parameters are not applied unless you run the initialization command. Standard configuration files (<code>.cfg</code>) are not affected by this issue.
xos0075691	<p>When MACsec is enabled on the same port that the MACsec Key Agreement (MKA) protocol will run on, if the local port is elected Key Server (KS), and the MACsec peer does not install and use a freshly distributed Secure Association Key (SAK) prior to its next MKPDU transmission, then the connection might never reach the secure state causing all traffic to be blocked.</p> <p>This issue occurs when inter-operating with third-party MACsec devices, and between ExtremeXOS devices when reconfiguring the cipher suite on multiple ExtremeXOS ports (for example, cipher suite from GCM-AES-128 to GCM-AES-256).</p>
Mirroring	
xos0075204	Mirroring a port to a remote IP address is not working on ExtremeSwitching X440-G2 series switches. Port+VLAN mirroring is not affected.
MLAG	

Table 9: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 30.3 (continued)

CR Number	Description
xos0074601	Ping is not working on MLAG port of a mixed stack of Summit X460-G2 and ExtremeSwitching X620 series switches if Summit X460-G2 is the master.
xos0075872	Traffic loss occurs for more than 20 seconds when controlling bridge is rebooted or when you disable/enable ISC cascade port.
xos0075939	Enabling MLAG on a port in NP state causes traffic issues.
MPLS	
xos0074611	Label mismatch issues between LDP routers after enabling LDP loop detection.
xos0074924	VPLS: VP leak occurs when switching pseudowire path from RSVP to LDP and vice versa.
xos0075683	VC label TTL has not been set correctly in VPLS.
Network Login	
xos0074606	NetLogin users are authenticated to random destinations when destination VLAN attributes from the RADIUS server are not received.
Policy	
xos0066643	NetLogin session is not cleared in session timeout when session timeout is received from RADIUS attribute.
xos0074910	Captive portal stops working when more clients try to access the captive portal page.
xos0075057	Traffic drop occurs when receiving LLDP packets on the ONEPolicy admin profile configured port.
xos0075544	Policy process ends unexpectedly at random time, when client in the network tries to access captive portal page.
Security	
xos0072784	Policy does not currently apply NSI in hardware for static and/or dynamic admin-profile configurations. Netlogin does not currently allow a port to be enabled if VXLAN is configured on the port. Note: For VXLAN, errors still occur for ports where policy is not active on that port, when policy is globally enabled.
SNMP	
xos0074806	SNMP walk fails when trap receiver is configured using SNMP community strings starting with "v,w,x,y,z".
Stacking	
xos0074952	Stack remains in listening state if both native and alternate ports are configured without inserted native port.
STP	
xos0074481	All participating VLANs are removed from STP after deleting one port + VLAN from the STP domain.
xos0076081	Backup root needs to be triggered for root expiry.