



Switch Engine Release Notes

Software Version 32.1

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July 2022



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Preface

Read the following topics to learn about:

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

Conventions

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

Text Conventions

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

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

Table 1: Notes and warnings






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

Table 2: Text

| Convention | Description |
|--|---|
| screen displays | This typeface indicates command syntax, or represents information as it is displayed on the screen. |
| The words <i>enter</i> and <i>type</i> | When you see the word <i>enter</i> in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says <i>type</i> . |
| Key names | Key names are written in boldface, for example Ctrl or Esc . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del |
| <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. |
| NEW! | New information. In a PDF, this is searchable text. |

Table 3: Command syntax

| Convention | Description |
|------------------------------------|--|
| bold text | Bold text indicates command names, keywords, and command options. |
| <i>italic</i> text | Italic text indicates variable content. |
| [] | Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets. |
| { x y z } | A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options. |
| x y | A vertical bar separates mutually exclusive elements. |
| < > | Nonprinting characters, such as passwords, are enclosed in angle brackets. |
| ... | Repeat the previous element, for example, <i>member</i> [<i>member</i> ...]. |
| \ | In command examples, the backslash indicates a “soft” line break. When a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash. |

Platform-Dependent Conventions

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

- ExtremeSwitching® switches
- SummitStack™

When a feature or feature implementation applies to specific platforms, the specific platform is noted in the heading for the section describing that implementation in the Switch Engine 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 device family, such as ExtremeSwitching, the family name is used. Explanations about features and operations that are the same across all product families simply refer to the product as the *device*.

Send Feedback

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

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

To send feedback, do either of the following:

- Access the feedback form at <https://www.extremenetworks.com/documentation-feedback/>.
- Email us at documentation@extremenetworks.com.

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.

Help and Support

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

Extreme Portal

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

The Hub

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

Call GTAC

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

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

- Your Extreme Networks service contract number, or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any actions already taken to resolve the problem

- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

Subscribe to Product Announcements

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

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

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

Related Publications

Switch Engine Publications

- [Switch Engine 32.1 Command Reference Guide](#)
- [Switch Engine 32.1 Feature License Requirements](#)
- [Switch Engine 32.1 User Guide](#)
- [Switch Engine 32.1 Release Notes](#)
- [ExtremeXOS and Switch Engine 32.1 SNMP Traps Reference](#)
- [ExtremeXOS and Switch Engine 32.1 EMS Messages Catalog](#)
- [Extreme Hardware/Software Compatibility and Recommendation Matrices](#)
- [Extreme Optics Compatibility](#)
- [Switch Configuration with Chalet for ExtremeXOS 21.x and Later](#)

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Overview

These release notes document Switch Engine 32.1, which adds features and resolves software deficiencies.



New in this Release

Release 32.1 introduces separate documentation for ExtremeXOS (non-Universal Hardware) and Switch Engine (Universal Hardware) switches. Visit <https://www.extremenetworks.com/support/documentation/product-type/software/> for the latest ExtremeXOS software documentation.

The following platforms support Switch Engine:

- ExtremeSwitching 5320 Series
- ExtremeSwitching 5420 Series
- ExtremeSwitching 5520 Series
- ExtremeSwitching 5720 Series



New Hardware Supported in Switch Engine 32.1

The following new hardware is supported in Switch Engine 32.1.

Table 4: ExtremeSwitching 5720 Series Switches

| | |
|-----------------------------|--|
| ExtremeSwitching 5720-24MW | 24 1/2.5/5GbaseT 802.3bt (90W) MACsec capable ports, 1 unpopulated VIM slot, 4 fan modules, 2 unpopulated PSU slots |
| ExtremeSwitching 5720-24MXW | 24 1/2.5/5/10GbaseT 802.3bt (90W) MACsec capable ports, 1 unpopulated VIM slot, 4 fan modules, 2 unpopulated PSU slots |
| ExtremeSwitching 5720-48MW | 48 1/2.5/5GbaseT 802.3bt (90W) MACsec capable ports, 1 unpopulated VIM slot, 4 fan modules, 2 unpopulated PSU slots |
| ExtremeSwitching 5720-48MXW | 48 1/2.5/5/10GbaseT 802.3bt (90W) MACsec capable ports, 1 unpopulated VIM slot, 4 fan modules, 2 unpopulated PSU slots |

Dual Network Operating System Information

All Universal Hardware switches can run two different network operating systems: Switch Engine (default) or Fabric Engine. When you power up the switch for the first time, you must select an operating system.

For more information about selecting a network operating system, or changing it after initial selection, see [Changing the Network Operating System](#) on page 22.



Security Information

[Linux Kernel](#) on page 12

[OpenSSL Version](#) on page 12

The following section covers important security information for Switch Engine 32.1.

Linux Kernel

Switch Engine 32.1 uses Linux Kernel 5.4.

OpenSSL Version

Switch Engine 32.1 uses FIPS openssl-fips-2.0.16.



Upgrading Switch Engine

For instructions about upgrading Switch Engine software, see *Software Upgrade and Boot Options* in [Switch Engine 32.1 User Guide](#).

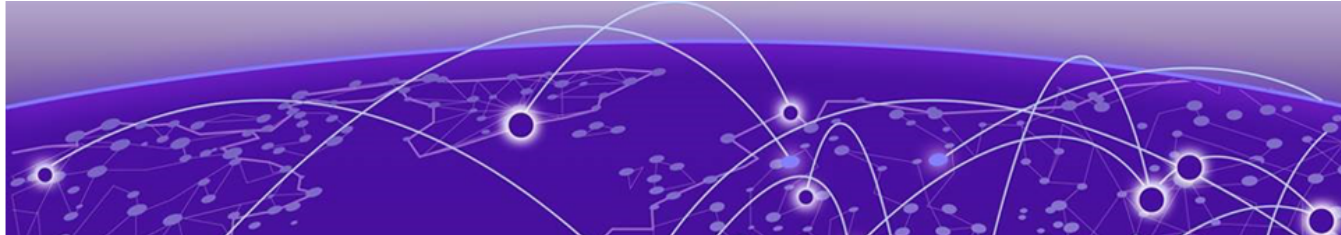
A Switch Engine core image (.xos file) must be downloaded and installed on the alternate (non-active) partition. If you try to download to an active partition, the system displays the following error message:
Error: Image can only be installed to the non-active partition..A
Switch Engine modular software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



Newly Purchased Switches Require Software Upgrade

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

For information about upgrading the Switch Engine software, see the *Switch Engine Upgrade Process* topic in the *Software Upgrade and Boot Options* chapter of the [Switch Engine 32.1 User Guide](#).



Default Switch Engine™ Settings

The following table shows the default settings for Switch Engine starting with version 31.6, and shows any changes that have been made to these settings and in what version these changes were made.

Table 5: Default Switch Engine Settings

| Feature | 31.6 | 31.7 | 32.1 |
|--|---|------|------|
| 1G behavior in 10G ports (5420 and 5520 series switches) | Autoneg OFF for port when 1G optic is inserted in a 10G port | | |
| Account Lockout | After 3 consecutive login failures, account is locked for 5 minutes. ^a | | |
| Auto-Discovery for Universal Hardware | Enabled. | | |
| AVB | Disabled. | | |
| BFD Strict Session Protection | Disabled. | | |
| BGP | Disabled. | | |
| Bluetooth | Enabled. | | |
| BOOTP Relay | Disabled. | | |
| CDP | Enabled. | | |
| Configuration auto save | Disabled. | | |
| Clear-flow | Disabled. | | |
| Diagnostics | Admin level privileges required to show diagnostics. ^a | | |
| DHCP | Disabled. | | |
| DNS Cache Resolver and Analytics | Disabled. | | |
| IPFIX | Disabled. | | |
| IP NAT | Disabled. | | |
| EAPS | Disabled. | | |
| EDP | Enabled on management port. | | |
| ELRP | Disabled. | | |

Table 5: Default Switch Engine Settings (continued)

| Feature | 31.6 | 31.7 | 32.1 |
|--------------------------------|--|------|------|
| ESRP | Disabled. | | |
| Extended Edge Switching (VPEX) | Disabled. | | |
| ExtremeCloud IQ | Enabled | | |
| FEC | Enabled on Native 25Gb ports. | | |
| Identity Management | Disabled. | | |
| IGMP | Enabled, set to IGMPv2 compatibility mode. | | |
| IGMP Snooping | Enabled. | | |
| Image Integrity Check | Disabled. | | |
| IP Route Compression | Enabled. | | |
| ISIS | Disabled. | | |
| LLDP | Enabled. | | |
| Log | Admin level privileges required to show log. ^a | | |
| Logging memory buffer | Generate an event when the logging memory buffer exceeds 90% of capacity. ^a | | |
| MAC Security | Disabled. | | |
| MLD | Disabled. | | |
| MLD Snooping | Disabled. | | |
| MPLS | Disabled. | | |
| MSRP | Disabled. | | |
| MSTP | Enabled. | | |
| NetLogin | All types of authentication are disabled. | | |
| NTP | Disabled. | | |
| ONEPolicy | Disabled. | | |
| Policy rule model | Hierarchical (Unless upgrading from 30.5 with a saved configuration set to access list.) | | |
| OpenFlow | Disabled. | | |
| OSPF | Disabled. | | |
| OVSDB | Disabled. | | |

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

Table 5: Default Switch Engine Settings (continued)

| Feature | 31.6 | 31.7 | 32.1 |
|----------------------------------|--|------|------|
| Passwords | Plain text password entry not allowed. ^a | | |
| PIM | Disabled. | | |
| PIM Snooping | Disabled. | | |
| PoE Fast PoE Perpetual PoE | Enabled. Disabled. Disabled. | | |
| RADIUS | Disabled for both switch management and network login. | | |
| RIP | Disabled. | | |
| RMON | Disabled. However, even in the disabled state, the switch responds to RMON queries and sets for alarms and events. | | |
| sFlow | Disabled. | | |
| SNMP server | Disabled. ^a | | |
| SSH | Disabled. | | |
| Stacking-support | Enabled. | | |
| Stacking auto-discovery | Enabled. | | |
| STP | Enabled. | | |
| Syslog | Disabled. | | |
| TACACS | Disabled. | | |
| Telnet | Disabled. ^a | | |
| VPEX IP Multicast Replication | BPE | | |
| VPLS | All newly created VPLS instances are enabled. | | |
| Watchdog | Enabled. | | |
| Web HTTP server | Disabled. ^a | | |



Switch Engine Image File Names

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

Table 6: Switch Engine Image Types (Prefixes)

| Switches | Image File Type (Prefix) |
|-----------------------------------|--|
| ExtremeSwitching 5320, 5420, 5520 | summit_arm Example: summit_arm-31.1.0.3.xos |
| ExtremeSwitching 5720 | onie Example: onie-32.1.1.6.x86_64.xos |



New and Corrected Features in Switch Engine 32.1

[Role-based ACLs](#) on page 19

[Port Notation for ExtremeSwitching 5720 Channelized Ports](#) on page 20

[ExtremeCloud IQ Agent Management VLAN Support](#) on page 21

This section lists the new and corrected features supported in the 32.1 software:

Role-based ACLs

Beginning with Release 32.1, the dynamic ACL rule(s) can be user-based or role-based. User-based rules are treated as higher priority than any other statically provisioned rules. Policy roles and the DACLS associated with them are dynamically created as needed based on the incoming RADIUS Filter-Id attribute. This attribute is automatically deleted when the last authenticated user associated with the role is removed.

When a set of role-based rules is installed for a given role or profile, they cannot be changed until that role is no longer in use. Role-based rules are shared by any other user who authenticates to the same role or profile. While both user based and role-based DACLS can be used on the device at the same time, a mix of user based and role-based DACLS are not permitted for a given user.

A role-based operation has a type 'r' and requires a preceding add operation (a,r). Each role requires a profile pre-configured with a unique name and access-list configuration.

A role-based with create operation has a type 'c' and also requires a preceding add operation (a,rc). The role or profile is dynamically created if it does not already exist. If created dynamically, the role or profile will be deleted when no longer in use.

A **delete-all** operation has a type of 'da' and no **match**, **action**, or **index** fields are permitted. When used, the **delete-all** must be the first entry in the list. When present, this operation removes all existing rules associated with the user or role. Neither the action field nor the index field is permitted and will be ignored if present.

The following match conditions can be used with role-based ACLs:

- `ipv4src ipv4source/mask-length`
- `ipv4dst ipv4dest/mask-length`
- `ipproto ipproto (TCP, UDP, ICMP, or protocol number)`(ICMP and protocol number as of Release 32.1)

- `l4srcport l4sourceport-l4sourceportend/mask-length` (requires `ipproto`; range is role-based only and no mask)
- `l4dstport l4destport-l4destportend/mask-length` (requires `ipproto`; range is role-based only and no mask)
- `ether` (role-based only)
- `any` (as of Release 32.1)

Supported Platforms

All ExtremeSwitching Universal platforms.

Limitations

- DNS is not supported on Extended Edge switches with Controlling Bridges on ExtremeSwitching 5420 and 5520 series switches.
- ACL style policy must be selected.
- Only a subset of the existing policy rules is allowed.
- SNMP is not supported.
- Not all rule types can be configured at the same time. For example, L4 port range rules with `ether` and other IP and masked L4 ports rules may not install correctly. This is the same limitation that applies to ACL Style Policy.

Port Notation for ExtremeSwitching 5720 Channelized Ports

The ExtremeSwitching 5720 series switch introduces a new notation for channelized ports. Previous channelized Universal ports (U1) mapped to unique numbers (49, 50, 51, 52). For the 5720 series switch, each channelized port receives a specified channelized number. See the following table for examples using a 48-port 5720 model.

The **slot:port** column applies to 5720 switches in a stack, or if the **configure system ports notation slot:port** command has been issued. The **port** column applies in all other instances.

Table 7: 5720 Port Notation

| 5720 Universal channelized ports using the port option | 5720 Universal channelized ports using the slot:port option | 5720 VIM-2CE channelized ports using the port option | 5720 VIM-2CE channelized ports using the slot:port option |
|---|--|---|--|
| 49:1 | 1:49:1 | 51:1 | 1:51:1 |
| 49:2 | 1:49:2 | 51:2 | 1:51:2 |
| 49:3 | 1:49:3 | 51:3 | 1:51:3 |
| 49:4 | 1:49:4 | 51:4 | 1:51:4 |
| 50:1 | 1:50:1 | 52:1 | 1:52:1 |
| 50:2 | 1:50:2 | 52:2 | 1:52:2 |

Table 7: 5720 Port Notation (continued)

| 5720 Universal channelized ports using the port option | 5720 Universal channelized ports using the slot:port option | 5720 VIM-2CE channelized ports using the port option | 5720 VIM-2CE channelized ports using the slot:port option |
|---|--|---|--|
| 50:3 | 1:50:3 | 52:3 | 1:52:3 |
| 50:4 | 1:50:4 | 52:4 | 1:52:4 |

**Note**

5720 VIM-6YE ports are not channelized and map to ports 51-53 and 54-56.

**Note**

Switches running Release 31.6 or earlier that are connected to a channelized 5720 port will not display the correct port number via the Extreme Discovery Protocol. The port numbers will display correctly via the Link Layer Discovery Protocol.

Supported Platform

This feature is supported on the ExtremeSwitching 5720 series switch.

ExtremeCloud IQ Agent Management VLAN Support

Beginning with Release 32.1, you can use ExtremeCloud IQ Agent to configure a server VR, VLAN Management, or address. This allows ExtremeCloud IQ Agent to use the VLAN IP interface as the Source IP during ExtremeCloud IQ communication.

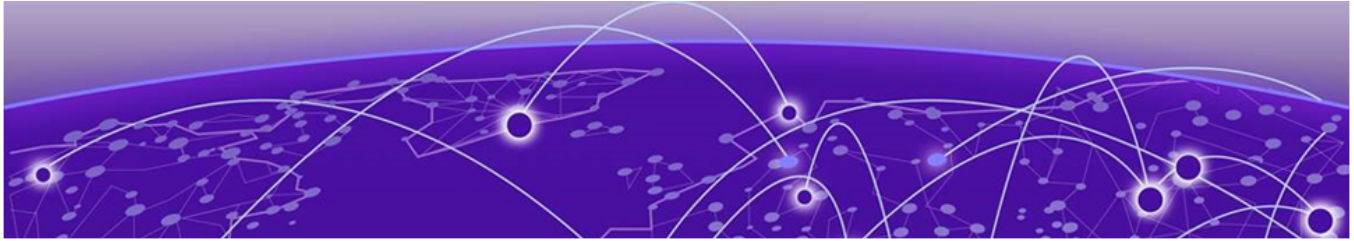
Supported Platforms

All ExtremeSwitching Universal platforms.

New CLI Command

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

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



Changing the Network Operating System

ExtremeSwitching Universal Hardware switches can run two different operating systems: Switch Engine (default) or Fabric Engine.

Making Your Initial Network Operating System Selection

You can make your initial selection of the operating system using:

- **ExtremeCloud™ IQ** (see [ExtremeCloud IQ Agent Support](#) on page 24)—You can select your network operating system when purchasing your switch, which associates the switch serial number with your desired network operating system, which then causes the desired network operating system to be loaded during ExtremeCloud onboarding. For more information about using ExtremeCloud IQ, go to <https://www.extremenetworks.com/support/documentation/extremecloud-iq/>.
- **Extreme Management Center**— see [Extreme Management Center User Guide](#)
- **Manually during boot-up:**
 - **Bootloader**—When you see the message `Starting Default Bootloader ...Press` and hold the `<spacebar>` to enter the bootrom, press and hold the **space bar** until the boot menu is displayed (you have 30 seconds):

```
*** 5320-48T-8XE Boot Menu ( 3.4.2.8 ) ***

EXOS: Default
EXOS: Primary 32.1.1.6
EXOS: Secondary 32.1.1.6
EXOS: Primary 32.1.1.6 with default configuration
EXOS: Secondary 32.1.1.6 with default configuration
EXOS: Rescue
Change the switch OS to VOSS
Run Manufacturing Diagnostics
Update bootloader
Reboot system
```

Use the **up** and **down** arrow keys to select `Change the switch OS to VOSS`, and then press **Enter**.



Note

The 5720 Series uses the **GRUB** menu. There is no need to press and hold the **space bar**. Use the **up** and **down** arrow keys to navigate the menu.

- **Safe defaults mode start-up menu**—When the question `Would you like to change the switch OS to VOSS? [y/N/q]` is displayed:
 - For Switch Engine, type `N`.
 - For Fabric Engine, type `y`.

Continue to log onto the switch. For more information about logging onto the switch, see the [Switch Engine 32.1 User Guide](#).

Changing Your Network Operating System

You can change your network operating system selection at any time.



Caution

Changing your network operating systems deletes all configuration files, debug information, logs, events, and statistics information of the previous network operating system.



Note

If you anticipate ever changing the operating system to Fabric Engine, and you want to statically assign IP addresses on the DHCP server, then it is recommended to assign them based on the DHCP client ID. For more information about this issue, see the *Using a BOOTP or DHCP Server* topic in the [Switch Engine 32.1 User Guide](#).

- **ExtremeCloud IQ**—See <https://www.extremenetworks.com/support/documentation/extremecloud-iq/>
- **Extreme Management Center**—See [Extreme Management Center User Guide](#)
- **CLI Command**—run the `download [url url {vr vrname} | image [active | inactive] [[hostname | ipaddress] filename [{vr} vrname] {block-size block_size}] {partition} {install {reboot}}` command specifying a VOSS image.



Note

Do *not* use the **active**, **inactive**, and **partition** options. They are not applicable for Fabric Engine.



ExtremeCloud IQ Agent Support

Switch Engine 32.1 supports ExtremeCloud IQ. For network administrators looking for unified management of access points, switches, & routers, ExtremeCloud IQ is a cloud-driven network management application that:

- simplifies network operations through an easy to use and intuitive interface, including minimal touch onboarding of devices
- provides ultimate flexibility in deployment choice, cloud platform choice, OS choice
- offers unlimited data duration for more informed networking decisions



Important

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

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

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

Table 8: Supported Platforms

| Switch Series | Switch Models |
|-----------------------|---|
| ExtremeSwitching 5320 | 5320-48T-8XE 5320-48P-8XE 5320-24T-8XE 5320-24P-8XE 5320-16P-4XE 5320-16P-4XE-DC |
| ExtremeSwitching 5420 | 5420F-8W-16P-4XE 5420F-24P-4XE 5420F-24S-4XE 5420F-24T-4XE 5420F-16MW-32P-4XE 5420F-16W-32P-4XE 5420F-48P-4XE 5420F-48P-4XL 5420F-48T-4XE 5420M-24T-4YE 5420M-24W-4YE 5420M-16MW-32P-4YE 5420M-48T-4YE 5420M-48W-4YE |

Table 8: Supported Platforms (continued)

| Switch Series | Switch Models |
|-----------------------|--|
| ExtremeSwitching 5520 | 5520-24T 5520-24W 5520-48T 5520-48W 5520-12MW-36W 5520-24X 5520-48SE |
| ExtremeSwitching 5720 | 5720-24MW 5720-24MXW 5720-48MW 5720-48MXW |



Extreme Hardware/Software Compatibility and Recommendation Matrices

Summit and ExtremeSwitching: ExtremeXOS Software Support provides information about the minimum version of ExtremeXOS software required to support switches.

The Extreme Optics Compatibility website displays supported hardware platforms, technical specifications, and usage considerations for pluggable optical devices (transceivers and cables) used in all Extreme Networks operating environments. To access the site, open <https://optics.extremenetworks.com/EXOS/> in a web browser.

To find the recommended Switch Engine releases for Universal Hardware platforms, see *ExtremeXOS Release Recommendations*.

The latest versions of this and other Switch Engine guides are at: www.extremenetworks.com/documentation/.



Compatibility with Extreme Management Center or ExtremeCloud IQ - Site Engine

Switch Engine 32.1 is compatible with the version of Extreme Management Center or ExtremeCloud IQ - Site Engine as shown in this table: http://emc.extremenetworks.com/content/common/releasenotes/extended_firmware_support.htm

Switch Engine 32.1 is compatible with ExtremeCloud IQ - Site Engine version 22.3 or later. Older versions (including Extreme Management Center) will not recognize devices running Switch Engine.

The ExtremeCloud IQ - Site Engine version 22.6 and Switch Engine version 32.1 can be used to onboard and manage the 5720 product line in non-production (demo/lab only) environments. For deployment in the production environment, an upgrade is required to both the Switch Engine firmware and the ExtremeCloud IQ - Site Engine version.



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 [Switch Engine 32.1 User Guide](#).



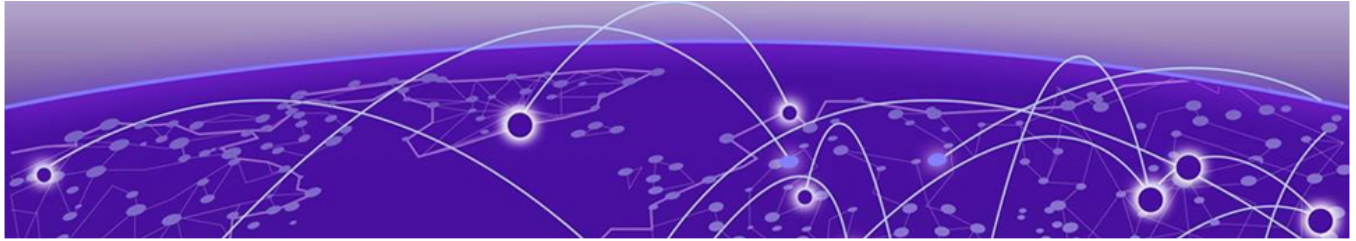
Tested Third-Party Products

The following third-party products have been tested for Switch Engine 32.1.

Tested RADIUS Servers

The following RADIUS servers are fully tested:

- Microsoft—Internet Authentication Server
- Meetinghouse
- FreeRADIUS



Extreme Switch Security Assessment

DoS Attack Assessment

Tools used to assess DoS attack vulnerability:

- Network Mapper (NMAP)

ICMP Attack Assessment

Tools used to assess ICMP attack vulnerability:

- SSPing
- Twinge
- Nuke
- WinFreeze

Port Scan Assessment

Tools used to assess port scan assessment:

- Nessus



Limits

[Limits Overview](#) on page 31

[Base License Limits](#) on page 33

[Premier License Limits](#) on page 60

[Notes for Limits Tables](#) on page 66

This chapter summarizes the supported limits in Switch Engine 32.1.

Limits Overview

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

- [Base License Limits](#) on page 33
- [Premier License Limits](#) on page 60

The ExtremeSwitching Universal family of switches includes two license levels: Base and Premier.

The following figure illustrates that each license level builds on the features of the license level below it. For example, the Premier license includes all of the features in the Base license, plus the features in the Premier license level.

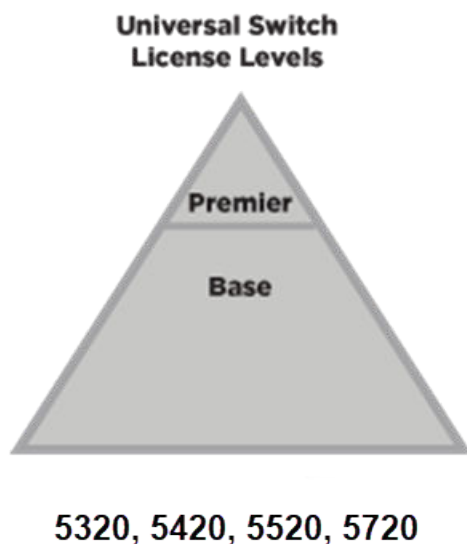


Figure 1: License Levels for non-Universal and Universal Switches

For more information about licenses, see [Switch Engine 32.1 Feature License Requirements](#).

The following tables summarize tested metrics for a variety of features, as measured in a per-system basis unless otherwise noted. These limits may change, but represent the current status. The contents of this table supersede any values mentioned in the Switch Engine 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 in use. For applicable limits, see the following tables for the controlling bridge you are using.

Base License Limits

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

Table 9: Supported Limits for the Base License

| Metric | Product | Limit |
|--|---|-------------------------------|
| Access lists (meters) —maximum number of meters. | ExtremeSwitching 5320 | 6,144 ingress 512 egress |
| | ExtremeSwitching 5420 | 6,144 ingress 512 egress |
| | ExtremeSwitching 5520 | 2,048 ingress 512 egress |
| | ExtremeSwitching 5720-MW | 6,144 ingress 3,072 egress |
| | ExtremeSwitching 5720-MXW | 6,144 ingress 6,144 egress |
| Access lists (policies) —suggested maximum number of lines in a single policy file. | ExtremeSwitching 5320, 5420, 5520, 5720 | 300,000 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|--|
| Access lists (policies) —maximum number of rules in a single policy file. ^a | ExtremeSwitching 5320-48T/P | 8,192 ingress 1,024 egress |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 8,192 ingress 512 egress |
| | ExtremeSwitching 5420M | 18,000 (rules double-wide (160-bit)) ingress 36,000 (rules single-wide (80-bit, default)) ingress 1,024 egress |
| | ExtremeSwitching 5420F | 8,000 (rules double-wide (160-bit)) ingress 16,000 (rules single-wide (80-bit, default)) ingress 1,024 egress |
| | ExtremeSwitching 5520 | 9,216 ingress 1,024 egress |
| | ExtremeSwitching 5720-MW | 18,432 (80-bit) ingress 8,192 egress |
| | ExtremeSwitching 5720-MXW | 36,864 (80-bit), 18,432 (160-bit) ingress 12,288 egress |
| Access lists (policies) —maximum number of rules in a single policy file in first stage (VFP). | ExtremeSwitching 5520, 5720 | 2,048 ingress only |
| | ExtremeSwitching 5320-48T/P, 5420 | 1,024 ingress only |
| | ExtremeSwitching 5320-16P | 512 ingress only |
| Access lists (slices) —number of ACL slices. | ExtremeSwitching 5720 | 12 ingress 4 egress |
| | ExtremeSwitching 5320-48T/P, 5420, 5520 | 18 ingress 4 egress |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 8 ingress 4 egress |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|--|----------------|
| Access lists (slices) —number of ACL slices in first stage (VFP). | ExtremeSwitching 5320, 5420, 5520, 5720 | 4 ingress only |
| ACL Per Port Meters —number of meters supported per port. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |
| ACL port ranges. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| Meters Packets-Per-Second Capable. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| AVB (audio video bridging) —maximum number of active streams. | ExtremeSwitching 5320, 5420 | 1,024 |
| | ExtremeSwitching 5520 | 4,096 |
| BFD sessions (Software Mode) —maximum number of BFD sessions. | ExtremeSwitching 5420, 5520, 5720 (default timers—1 sec) | 512 |
| BGP (peers) —maximum number of BGP peers. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2 |
| BGP auto-peering —maximum number of auto-peering nodes and VTEPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |
| BGP auto-peering attached IPv4 hosts — maximum number of attached IPv4 hosts. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64,000 |
| BGP auto-peering attached IPv6 hosts — maximum number of attached IPv6 hosts. | ExtremeSwitching 5320, 5420, 5520, 5720 | 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. | ExtremeSwitching 5720 | 16* |
| | ExtremeSwitching 5320, 5420, 5520 | 4* |
| BGP auto-peering maximum IPv4 prefixes with ECMP —Maximum number of IPv4 Network prefixes with ECMP. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16,000 |
| BGP auto-peering maximum IPv6 prefixes with ECMP —Maximum number of IPv6 Network prefixes with ECMP. | ExtremeSwitching 5320, 5420, 5520, 5720 | 254 |
| BGP auto-peering MLAG peers —maximum MLAG peers per AutoBGP node. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1 |
| BGP auto-peering VRFs —maximum number of VRFs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|-------|
| BGP auto-peering EVPN instances —maximum EVPN instances. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per virtual router. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| BOOTP/DHCP relay —maximum number of BOOTP or DHCP servers per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| BOOTP/DHCP relay —maximum number of DHCPv4/v6 relay agents | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,000 |
| Connectivity fault management (CFM) —maximum number of CFM domains. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| CFM —maximum number of CFM associations. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 |
| CFM —maximum number of CFM up end points. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| CFM —maximum number of CFM down end points. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| CFM —maximum number of CFM remote end points per up/down end point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,000 |
| CFM —maximum number of dot1ag ports. | ExtremeSwitching 5320, 5420, 5520, 5720 | 128 |
| CFM —maximum number of CFM segments. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,000 |
| CFM —maximum number of MIPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 |
| CLEAR-Flow —total number of rules supported. The ACL rules plus CLEAR-Flow rules must be less than the total number of supported ACLs. | ExtremeSwitching 5320, 5420, 5720 | 8,192 |
| | ExtremeSwitching 5520 | 9,215 |
| Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs) —maximum number of DCBX application TLVs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|---|
| DHCPv6 Prefix Delegation Snooping —Maximum number of DHCPv6 prefix delegation snooped entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 (with underlying protocol RIPng) 128 (with underlying protocol OSPFv3) 1,024 (with static routes) |
| DHCP snooping entries —maximum number of DHCP snooping entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,050 |
| Dynamic ACLs —maximum number of ACLs processed per second. Note: Limits are load-dependent. | ExtremeSwitching 5320, 5420, 5520, 5720 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. | ExtremeSwitching 5720 ExtremeSwitching 5320-24T/P, 5320-16P ExtremeSwitching 5320-48T/P, 5420, 5520 | 128 32 64 |
| EAPSV1 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching 5320-24T/P, 5320-16P | 1,000 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 2,000 |
| EAPSV2 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching 5320, 5420, 5520 | 500 |
| | ExtremeSwitching 5720 | 2,000 |
| ELSM (vlan-ports) —maximum number of VLAN ports. | ExtremeSwitching 5320-24T/P, 5320-16P | 4,000 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 5,000 |
| ERPS domains —maximum number of ERPS domains with or without CFM configured. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| ERPSv1 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching 5320-24T/P, 5320-16P | 1,000 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 2,000 |
| ERPSv2 protected VLANs —maximum number of protected VLANs. | ExtremeSwitching 5320-24T/P, 5320-16P | 500 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 2,000 |
| ESRP groups —maximum number of ESRP groups | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| ESRP domains —maximum number of ESRP domains. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|--|---|
| ESRP L2 VLANs —maximum number of ESRP VLANs without an IP address configured. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,000 |
| ESRP L3 VLANs —maximum number of ESRP VLANs with an IP address configured. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 ExtremeSwitching 5320-24T/P, 5320-16P | 511 509 |
| ESRP (maximum ping tracks) —maximum number of ping tracks per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| ESRP (IP route tracks) —maximum IP route tracks per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| ESRP (VLAN tracks) —maximum number of VLAN tracks per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1 |
| Extended Edge Switching maximum BPEs —maximum number of attached bridge port extenders (BPEs). | ExtremeSwitching 5520 ExtremeSwitching 5420 | 48 20 |
| Extended Edge Switching maximum cascade ports —maximum number of upstream ports on bridge port extenders (BPEs). | ExtremeSwitching 5420, 5520 | 2 on V400-24 and V300 models 4 on V400-48 models |
| Extended Edge Switching maximum tiers —maximum number of cascade levels (tiers) of bridge port extenders (BPEs). | ExtremeSwitching 5420, 5520 | 4 (except for V300-8P-2T-W, which support 1 tier) |
| Extended Edge Switching maximum ring BPEs —maximum number of bridge port extenders (BPEs) in a ring topology. | ExtremeSwitching 5420, 5520 | 8 |
| Extended Edge Switching maximum VLANs —maximum number of VLANs - Includes all VLANs | ExtremeSwitching 5520 ExtremeSwitching 5420 | 4,094 1,024 |
| Extended Edge Switching VLAN+ port memberships —maximum number of VLAN+ (extended) port memberships. | ExtremeSwitching 5520 ExtremeSwitching 5420 | 12,000 in hash mode (default) 131,000 in port-group mode 8,750 in hash mode (default) 131,617 in port-group mode |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|----------------------|
| Forwarding rate —maximum L3 software forwarding rate. | ExtremeSwitching 5320-48P | 19,142 pps |
| | ExtremeSwitching 5420F-48T | 21,585 pps |
| | ExtremeSwitching 5520-24T | 18,838 pps |
| | ExtremeSwitching 5720-MW | 27,000 pps |
| | ExtremeSwitching 5720-MXW | 31,000 pps |
| FDB (unicast blackhole entries) —maximum number of unicast blackhole FDB entries. | ExtremeSwitching 5320 | 32,000 |
| | ExtremeSwitching 5420M | 65,536 |
| | ExtremeSwitching 5420F | 32,768 ^f |
| | ExtremeSwitching 5520 | 114,688 ^f |
| | ExtremeSwitching 5720-MW | 163,840 ^f |
| | ExtremeSwitching 5720-MXW | 294,912 ^f |
| FDB (multicast blackhole entries) —maximum number of multicast blackhole FDB entries. | ExtremeSwitching 5520, 5720-MW | 4,096 |
| | ExtremeSwitching 5420 | 1,024 |
| | ExtremeSwitching 5320 | 1,000 |
| | ExtremeSwitching 5720-MXW | 16,000 |
| FDB (maximum L2 entries) —maximum number of MAC addresses. | ExtremeSwitching 5320 | 32,000 |
| | ExtremeSwitching 5420M | 65,536 |
| | ExtremeSwitching 5420F | 32,768 ^g |
| | ExtremeSwitching 5520 | 114,688 ^g |
| | ExtremeSwitching 5720-MW | 163,840 ^g |
| | ExtremeSwitching 5720-MXW | 294,912 ^g |
| FDB (maximum L2 entries) —maximum number of multicast FDB entries. | ExtremeSwitching 5520 | 4,096 |
| | ExtremeSwitching 5320, 5420 | 1,024 |
| | ExtremeSwitching 5720 | 16,000 |
| Identity management —maximum number of Blacklist entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 512 |
| Identity management —maximum number of Whitelist entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 512 |
| Identity management —maximum number of roles that can be created. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |
| Identity management —maximum role hierarchy depth allowed. | ExtremeSwitching 5320, 5420, 5520, 5720 | 5 |
| Identity management —maximum number of attribute value pairs in a role match criteria. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|-------|
| Identity management —maximum number of child roles for a role. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| Identity management —maximum number of policies/dynamic ACLs that can be configured per role. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| Identity management —maximum number of LDAP servers that can be configured. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| Identity management —maximum number of Kerberos servers that can be configured. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20 |
| Identity management —maximum database memory size. | ExtremeSwitching 5320, 5420, 5520, 5720 | 512 |
| Identity management —recommended number of identities per switch. Note: Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms. | ExtremeSwitching 5320, 5420, 5520, 5720 | 100 |
| Identity management —recommended number of ACL entries per identity. Note: Number of ACLs per identity, based on system ACL limitation. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20 |
| Identity management —maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file. | ExtremeSwitching 5320, 5420, 5520, 5720 | 500 |
| IGMP snooping per VLAN filters —maximum number of VLANs supported in per-VLAN IGMP snooping mode. | ExtremeSwitching 5320, 5420 | 1,500 |
| | ExtremeSwitching 5720 | 4,000 |
| | ExtremeSwitching 5520 | 2,500 |
| IGMPv1/v2 SSM-map entries —maximum number of IGMPv1/v2 SSM mapping entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 500 |
| IGMPv1/v2 SSM-map entries —maximum number of sources per group in IGMPv1/v2 SSM mapping entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 50 |
| IGMPv2 subscriber —maximum number of IGMPv2 subscribers per port. ⁿ | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,000 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|----------------------|
| IGMPv2 subscriber —maximum number of IGMPv2 subscribers per switch. ⁿ | ExtremeSwitching 5320, 5420, 5520 | 20,000 |
| | ExtremeSwitching 5720-MW | 45,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| IGMPv3 maximum source per group —maximum number of source addresses per group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 250 |
| IGMPv3 subscriber —maximum number of IGMPv3 subscribers per port. ⁿ | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,000 |
| IGMPv3 subscriber —maximum number of IGMPv3 subscribers per switch. ⁿ | ExtremeSwitching 5320, 5420, 5520 | 20,000 |
| | ExtremeSwitching 5720-MW | 45,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| IP ARP entries in software —maximum number of IP ARP entries in software. Note: Might be limited by hardware capacity of FDB (maximum L2 entries). | ExtremeSwitching 5320, 5520 | 74,750 ^h |
| | ExtremeSwitching 5420M models | 24,000 |
| | ExtremeSwitching 5420F models | 12,000 |
| | ExtremeSwitching 5720-MW | 100,000 |
| | ExtremeSwitching 5720-MXW | 221,000 |
| 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 5320 | 12,000 |
| | ExtremeSwitching 5420M models | 24,000 |
| | ExtremeSwitching 5420F models | 12,000 |
| | ExtremeSwitching 5520 | 60,000 ^h |
| | ExtremeSwitching 5720-MW | 80,000 ^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 5320 | 10,000 |
| | ExtremeSwitching 5420M models | 21,000 |
| | ExtremeSwitching 5420F models | 10,000 |
| | ExtremeSwitching 5520 | 49,000 ^h |
| | ExtremeSwitching 5720-MW | 70,000 ^h |
| IP flow information export (IPFIX) —number of simultaneous flows. | ExtremeSwitching 5720-MXW | 156,000 ^h |
| | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |

Table 9: Supported Limits for the Base 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 5320 | 20,000 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 24,000 |
| | ExtremeSwitching 5420M | 36,000 |
| | ExtremeSwitching 5420F | 24,000 ^h |
| | ExtremeSwitching 5520 | 102,000 ^h |
| | ExtremeSwitching 5720-MW | 139,000 ^h |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 245,000 ^h |
| IPv4 routes —maximum number of IPv4 routes in software (combination of unicast and multicast routes), including static and from all routing protocols. | ExtremeSwitching 5320, 5420, 5520 | 81,000 |
| | ExtremeSwitching 5720-MW | 163,000 |
| | ExtremeSwitching 5720-MXW | 288,000 |
| IPv4 routes (LPM entries in hardware) — number of IPv4 routes in hardware. | ExtremeSwitching 5520 | 81,000 ^q |
| | ExtremeSwitching 5720-MW | 163,000 ^q |
| | ExtremeSwitching 5720-MXW | 288,000 ^q |
| IPv6 6in4 tunnel —maximum number of IPv6 6in4 tunnels. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| IPv6 6to4 tunnel —maximum number of IPv6 6to4 tunnels. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1 (per virtual router) |
| IPv6 addresses on an interface —maximum number of IPv6 addresses on an interface. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| IPv6 addresses on a switch —maximum number of IPv6 addresses on a switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| IPv6 host entries in hardware —maximum number of IPv6 neighbor entries in hardware. | ExtremeSwitching 5320 | 6,000 |
| | ExtremeSwitching 5420M models | 12,000 |
| | ExtremeSwitching 5420F models | 6,000 |
| | ExtremeSwitching 5520 | 18,000 ^s |
| | ExtremeSwitching 5720-MW | 24,000 ^s |
| | ExtremeSwitching 5720-MXW | 78,000 ^s |
| IPv6 routes in software —maximum number of IPv6 routes in software, including static routes and routes from all routing protocols. | ExtremeSwitching 5320, 5420, 5520 | 18,000 ^q |
| | ExtremeSwitching 5720-MW | 107,000 ^q |
| | ExtremeSwitching 5720-MXW | 213,000 ^q |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|----------------------------|
| IPv6 routes (LPM entries in hardware)—maximum number of IPv6 routes in hardware. | ExtremeSwitching 5520 | 40,000 ^q |
| | ExtremeSwitching 5420 | 6,000 |
| | ExtremeSwitching 5720-MW | 107,000 ^q |
| | ExtremeSwitching 5720-MXW | 213,000 ^q |
| IPv6 routes with a mask greater than 64 bits in hardware—maximum number of such IPv6 LPM routes in hardware. | ExtremeSwitching 5320, 5420 | 256 |
| | ExtremeSwitching 5520 | 8,192 ^r |
| | ExtremeSwitching 5720-MW | 16,000 ^r |
| | ExtremeSwitching 5720-MXW | 24,000 ^r |
| IPv6 route sharing in hardware—route mask lengths for which ECMP is supported in hardware. | ExtremeSwitching 5320, 5420 | 0–64, >64 single path only |
| | ExtremeSwitching 5520, 5720 | 0–128 ^r |
| IP router interfaces—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching 5320-48T/P, 5420 | 1,533 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 509 |
| | ExtremeSwitching 5520, 5720 | 2,048 |
| IP multicast static routes—maximum number of permanent multicast IP routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| IP unicast static routes—maximum number of permanent IP unicast routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| IP route sharing (maximum gateways)—Configurable maximum number of gateways used by equal cost multipath OSPF, BGP, IS-IS, static routes, or L2VPNs. Static routes, OSPF, and BGP are limited to 64 ECMP gateways per destination, while IS-IS is limited to 8. L2VPNs are limited to 16 LSPs per pseudowire on platforms that support 32 gateways, and 64 LSPs per pseudowire on platforms that support 64 gateways. | ExtremeSwitching 5320, 5420, 5520 | 2, 4, or 8 |
| | ExtremeSwitching 5720 | 2, 4, 8, 16, 32, or 64 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|--|---|
| IP route sharing (total combinations of gateway sets)—maximum number of combinations of sets of adjacent gateways used by multipath OSPF, BGP, IS-IS, or static routes. | ExtremeSwitching 5320 | 128 (if maximum gateways is 2) 128 (if maximum gateways is 4) 64 (if maximum gateways is 8) |
| | ExtremeSwitching 5420 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 Switch Engine 32.1 User Guide . | 510 (if maximum gateways is 2) 254 (if maximum gateway is 4) 126 (if maximum gateways is 8) |
| | ExtremeSwitching 5520 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 Switch Engine 32.1 User Guide . | 2046 (if maximum gateways is 2) 1022 (if maximum gateway is 4) 510 (if maximum gateways is 8) |
| | ExtremeSwitching 5720 if maximum gateways is 2 if maximum gateways is 4 if maximum gateways is 8 if maximum gateways is 16 (default) if maximum gateways is 32 if maximum gateways is 64 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 Switch Engine 32.1 User Guide . | 2,046 2,046 2,046 1,022 510 254 |
| IP multinetting (secondary IP addresses)—maximum number of secondary IP addresses per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| Jumbo frames—maximum size supported for jumbo frames, including the CRC. | ExtremeSwitching 5320, 5420, 5520, 5720 | 9,216 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|--------|
| L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch —maximum number of VCCV enabled VPLS VPNs. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| L2 VPN: VPLS MAC addresses —maximum number of MAC addresses learned by a switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| L2 VPN: VPLS VPNs —maximum number of VPLS virtual private networks per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| L2 VPN: VPLS peers —maximum number of VPLS peers per VPLS instance. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| L2 VPN: LDP pseudowires —maximum number of pseudowires per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| L2 VPN: static pseudowires —maximum number of static pseudowires per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| L2 VPN: Virtual Private Wire Service (VPWS) VPNs —maximum number of virtual private networks per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| 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 the same. | ExtremeSwitching 5320 | 32,000 |
| | ExtremeSwitching 5420 | 64,000 |
| | ExtremeSwitching 5520 | 32,768 |
| | ExtremeSwitching 5720-MW | 49,152 |
| | ExtremeSwitching 5720-MXW | 81,920 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|---------|
| 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 is the same for MVR senders, PIM Snooping entries, PIM SSM cache, IGMP senders, PIM cache. Assumes source-group-vlan mode as look up key. Layer 3 IPMC cache limit in mixed mode also has the same value. | ExtremeSwitching 5320 | 8,000 |
| | ExtremeSwitching 5420M | 12,000 |
| | ExtremeSwitching 5420F | 6,000 |
| | ExtremeSwitching 5520 | 43,000 |
| | ExtremeSwitching 5720-MW | 61,000 |
| | ExtremeSwitching 5720-MXW | 110,000 |
| 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 is the same for MLD sender per switch, PIM IPv6 cache. Assumes source-group-vlan mode as lookup key. | ExtremeSwitching 5320 | 4,000 |
| | ExtremeSwitching 5420M | 6,000 |
| | ExtremeSwitching 5420F | 3,000 |
| | ExtremeSwitching 5520 | 21,500 |
| | ExtremeSwitching 5720-MW | 30,500 |
| | ExtremeSwitching 5720-MXW | 55,000 |
| Load sharing —maximum number of load sharing groups. Note: The actual number of load-sharing groups that can be configured is limited by the number of physical ports present in the switch or SummitStack. | ExtremeSwitching 5320, 5420, 5520, 5720 | 128 |
| Load sharing —maximum number of ports per load-sharing group. | For standalone and stacked: ExtremeSwitching 5320, 5420 | 8 |
| | For standalone: ExtremeSwitching 5520, 5720 | 32 |
| | For stacked: ExtremeSwitching 5520, 5720 | 64 |
| Logged messages —maximum number of messages logged locally on the system. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20,000 |
| MAC-based security —maximum number of MAC-based security policies. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|--|--|
| MAC Locking —Maximum number of MAC locking stations that can be learned on a port. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 (static MAC locking stations) 600 (first arrival MAC locking stations) |
| Meters —maximum number of meters supported. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| Maximum mirroring instances. | ExtremeSwitching 5320, 5420, 5520, 5720 | 4 total, 2 egress |
| Mirroring (filters) —maximum number of mirroring filters. Note: This is the number of filters across all the active mirroring instances. | ExtremeSwitching 5320, 5420, 5520, 5720 | 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. | ExtremeSwitching 5320, 5420, 5520, 5720 | 128 |
| Mirroring, one-to-many (monitor port) —maximum number of one-to-many monitor ports. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |
| MLAG ports —maximum number of MLAG ports allowed. Note: The number of MLAG ports that can be configured is limited by the number of physical ports present in the system. | ExtremeSwitching 5320 ExtremeSwitching 5720 ExtremeSwitching 5420, 5520 Stacking Note: Maximum user ports | 55 63 59 1 |
| MLAG peers —maximum number of MLAG peers allowed. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2 |
| MPLS RSVP-TE interfaces —maximum number of interfaces. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS RSVP-TE egress LSPs —maximum number of egress LSPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS RSVP-TE transit LSPs —maximum number of transit LSPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|-------|
| MPLS RSVP-TE paths —maximum number of paths. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS RSVP-TE profiles —maximum number of profiles. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS RSVP-TE EROs —maximum number of EROs per path. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS LDP peers —maximum number of MPLS LDP peers per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS LDP adjacencies —maximum number of MPLS LDP adjacencies per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS LDP ingress LSPs —maximum number of MPLS LSPs that can originate from a switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS LDP-enabled interfaces —maximum number of MPLS LDP configured interfaces per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS LDP transit LSPs —maximum number of MPLS transit LSPs per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS LDP egress LSPs —maximum number of MPLS egress LSPs that can terminate on a switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS static egress LSPs —maximum number of static egress LSPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS static ingress LSPs —maximum number of static ingress LSPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| MPLS static transit LSPs —maximum number of static transit LSPs | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| Multicast listener discovery (MLD) snooping per-VLAN filters —maximum number of VLANs supported in per-VLAN MLD snooping mode. | ExtremeSwitching 5320, 5420 | 1,500 |
| | ExtremeSwitching 5520 | 1,000 |
| | ExtremeSwitching 5720 | 1,500 |
| Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per port. ⁿ | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,000 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|--------|
| Multicast listener discovery (MLD)v1 subscribers —maximum number of MLDv1 subscribers per switch. ⁿ | ExtremeSwitching 5320, 5420, 5520 | 10,000 |
| | ExtremeSwitching 5720-MW | 30,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per port. ⁿ | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,000 |
| Multicast listener discovery (MLD)v2 subscribers —maximum number of MLDv2 subscribers per switch. ⁿ | ExtremeSwitching 5320, 5420, 5520 | 10,000 |
| | ExtremeSwitching 5720-MW | 30,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| Multicast listener discovery (MLD)v2 maximum source per group —maximum number of source addresses per group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 200 |
| Multicast listener discovery (MLD) SSM-map entries —maximum number of MLD SSM mapping entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 500 |
| Multicast listener discovery (MLD) SSM-MAP entries —maximum number of sources per group in MLD SSM mapping entries. | ExtremeSwitching 5320, 5420, 5520, 5720 | 50 |
| Network Login —maximum number of clients being authenticated on MAC-based VLAN enabled ports. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| Network Login —maximum number of clients being authenticated with policy mode enabled with TCI overwrite enabled. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| Network Login —maximum number of dynamic VLANs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| Network Login VLAN VSAs —maximum number of VLANs a client can be authenticated on at any given time. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10 |
| Network Service Identifiers (NSI)/VLAN mappings —maximum number of VLANs to NSI mappings. | ExtremeSwitching 5320, 5420, 5520, 5720 | 94 |
| Node Alias —maximum number of entries per slot. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8,192 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|---|
| ONEPolicy Dynamic ACL Rules —maximum number of Dynamic ACLs supported via RADIUS VSA 232 per user in Access-List mode. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |
| ONEPolicy Roles/Profiles —maximum number of policy roles/profiles. | ExtremeSwitching 5320, 5420, 5520, 5720 | 63 |
| ONEPolicy Rules per Role/Profile —maximum number of rules per role/policy. | ExtremeSwitching 5320, 5420 | IPv4 Rules: 1,024 IPv6 Rules: 0 MAC Rules: 0 L2 Rules: 952 |
| | ExtremeSwitching 5720-MW | IPv4 Rules: 1,536 IPv6 Rules: 1,536 MAC Rules: 1,536 L2 Rules: 1,464 |
| | ExtremeSwitching 5720-MXW | IPv4 Rules: 2,048 IPv6 Rules: 2,048 MAC Rules: 2,048 L2 Rules: 1,976 |
| | ExtremeSwitching 5520 | 4,024 |
| ONEPolicy Authenticated Users per Switch —maximum number of authenticated users per switch only with TCI-Overwrite enabled. | ExtremeSwitching 5520, 5720 | 1,024 |
| | ExtremeSwitching 5320, 5420 | 512 |
| | Stacking | Depends on the stack nodes, but the maximum is 65,535. |
| ONEPolicy Authenticated Users per Switch —maximum number of authenticated users per switch with TCI-Overwrite disabled. Note: The maximum values assume 75% utilization of VLAN-XLATE hash table. | Stacking | 1,536–65,534 |
| | ExtremeSwitching 5320, 5420 | 768 |
| | ExtremeSwitching 5720 | 12,288 |
| | ExtremeSwitching 5520 | 9,216 |

Table 9: Supported Limits for the Base 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. | ExtremeSwitching 5320, 5420 | 768 |
| | ExtremeSwitching 5720 | 12,288 |
| | ExtremeSwitching 5520 | 9,216 |
| ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port with only with TCI-Overwrite enabled. | ExtremeSwitching 5320, 5420 | 512 |
| | ExtremeSwitching 5520, 5720 | 1,024 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types —total maximum number of unique permit/deny traffic classification rules types (system/stack). | ExtremeSwitching 5320, 5420 | 1,976 |
| | ExtremeSwitching 5720-MW | 6,072 |
| | ExtremeSwitching 5720-MXW | 8,120 |
| | ExtremeSwitching 5520 | 4,024 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types — maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest). | ExtremeSwitching 5520 | 1,024 |
| | ExtremeSwitching 5420 | 512 |
| | ExtremeSwitching 5720-MW | 1,536 |
| | ExtremeSwitching 5720-MXW | 2,048 |
| | ExtremeSwitching 5320 | N/A |
| ONEPolicy Permit/Deny Traffic Classification Rules Types — maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest). | ExtremeSwitching 5520 | 1,024 |
| | ExtremeSwitching 5420 | 512 |
| | ExtremeSwitching 5720-MW | 1,536 |
| | ExtremeSwitching 5720-MXW | 2,048 |
| | ExtremeSwitching 5320 | N/A |
| ONEPolicy Permit/Deny Traffic Classification Rules Types — maximum number of unique IPv4 permit/deny traffic classification rules (typesipsource / ipdest / ipfrag / udpsourceportIP / udpdestportIP / tcpsourceportIP / tcpdestportIP / ipttl / iptos / iptype). | ExtremeSwitching 5320, 5520 | 1,024 |
| | ExtremeSwitching 5720-MW | 1,536 |
| | ExtremeSwitching 5720-MXW | 2,048 |
| | ExtremeSwitching 5420 | 512 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types — maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port). | ExtremeSwitching 5320, 5520 | 952 |
| | ExtremeSwitching 5720-MW | 1,464 |
| | ExtremeSwitching 5720-MXW | 1,976 |
| | ExtremeSwitching 5420 | 440 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|--------|
| OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB. | ExtremeSwitching 5520 | 5,000 |
| | ExtremeSwitching 5720 | 10,000 |
| | ExtremeSwitching 5320, 5420 | 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 5520, 5720 | 2,000 |
| | ExtremeSwitching 5320, 5420 | 1,600 |
| OSPFv2 interfaces —recommended maximum number of OSPF interfaces on a switch (active interfaces only). | ExtremeSwitching 5320, 5420, 5520, 5720 | 4 |
| OSPFv2 links —maximum number of links in the router LSA. | ExtremeSwitching 5520, 5720 | 400 |
| | ExtremeSwitching 5320, 5420 | 320 |
| OSPFv2 neighbors —maximum number of supported OSPF adjacencies. | ExtremeSwitching 5320, 5420, 5520, 5720 | 4 |
| OSPFv2 routers in a single area —recommended maximum number of routers in a single OSPF area. | ExtremeSwitching 5520 | 50 |
| | ExtremeSwitching 5720 | 100 |
| | ExtremeSwitching 5320, 5420 | 40 |
| OSPFv2 virtual links —maximum number of supported OSPF virtual links. | ExtremeSwitching 5520, 5720 | 32 |
| | ExtremeSwitching 5320, 5420 | 25 |
| OSPFv3 areas —as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching 5520 | 16 |
| | ExtremeSwitching 5720 | 100 |
| | ExtremeSwitching 5320, 5420 | 12 |
| OSPFv3 external routes —recommended maximum number of external routes. | ExtremeSwitching 5520, 5720-MXW | 10,000 |
| | ExtremeSwitching 5320, 5420, 5720-MW | 7,500 |
| OSPFv3 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes. | ExtremeSwitching 5520 | 3,000 |
| | ExtremeSwitching 5720 | 4,000 |
| | ExtremeSwitching 5320, 5420 | 500 |
| OSPFv3 interfaces —maximum number of OSPFv3 interfaces (active interfaces only). | ExtremeSwitching 5320, 5420, 5520, 5720 | 4 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|--|
| OSPFv3 neighbors —maximum number of OSPFv3 neighbors. | ExtremeSwitching 5320, 5420, 5520, 5720 | 4 |
| OSPFv3 virtual links —maximum number of OSPFv3 virtual links supported. | ExtremeSwitching 5520, 5720 | 16 |
| | ExtremeSwitching 5320, 5420 | 12 |
| PIM IPv4 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| PIM IPv4 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 180 |
| PIM IPv4 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 3,000 (depends on policy file limits) |
| PIM IPv4 Limits —maximum number of multicast sources per group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 5,000 |
| PIM IPv4 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 145 |
| PIM IPv4 Limits —static rendezvous points. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching 5320, 5420, 5520, 5720 | N/A |
| PIM IPv6 Limits —maximum number of multicast sources per group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,750 |
| PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 70 |
| PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 3,000 (depends on policy file limits) |
| PIM IPv6 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |
| PIM IPv6 Limits —maximum number of secondary addresses per interface. | ExtremeSwitching 5320, 5420, 5520, 5720 | 70 |
| PIM IPv6 Limits —static rendezvous points. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|------------------|
| Policy-based routing (PBR) redundancy —maximum number of flow-redirects. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 ^o |
| Policy-based routing (PBR) redundancy —maximum number of next hops per each flow-direct. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 ^o |
| Port-specific VLAN tags —maximum number of port-specific VLAN tags. | ExtremeSwitching 5320, 5420, 5520 | N/A |
| | ExtremeSwitching 5720 | 1,023 |
| Port-specific VLAN tags —maximum number of port-specific VLAN tag ports. | ExtremeSwitching 5320, 5420, 5520 | N/A |
| | ExtremeSwitching 5720 | 4,000 |
| Private VLANs —maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 36 |
| 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. | ExtremeSwitching 5320, 5420, 5520, 5720 | 960 |
| Private VLANs —maximum number of private VLANs in an L2-only environment. | ExtremeSwitching 5320, 5420, 5520, 5720 | 960 |
| Route policies —suggested maximum number of lines in a route policy file. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10,000 |
| RIP Learned Routes —maximum number of RIP routes supported without aggregation. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10,000 |
| RIP interfaces on a single router —recommended maximum number of RIP routed interfaces on a switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 |
| RIPng learned routes —maximum number of RIPng routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 3,000 |
| Spanning Tree (maximum STPDs) —maximum number of Spanning Tree Domains on port mode EMISTP. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 64 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 32 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|--|---|-------|
| 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, for an ExtremeSwitching switch that supports 256 PVST domains (maximum) and 4,096 STP ports (maximum), the maximum number of active ports per PVST domain would be 16 ports ($4,096 \div 256$). | ExtremeSwitching 5320, 5420, 5520, 5720 | 128 |
| Spanning Tree —maximum number of multiple spanning tree instances (MSTI) domains. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 64 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 32 |
| Spanning Tree —maximum number of VLANs per MSTI. Note: Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 600 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 256 |
| Spanning Tree —maximum number of VLANs on all MSTP instances. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 1,024 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 512 |
| Spanning Tree (802.1d domains) —maximum number of 802.1d domains per port. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1 |
| Spanning Tree (number of ports) —maximum number of ports including all Spanning Tree domains. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 4,096 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 2,048 |
| Spanning Tree (maximum VLANs) —maximum number of STP-protected VLANs (dot1d and dot1w). | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 1,024 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 600 |
| SSH (number of sessions) —maximum number of simultaneous SSH sessions. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| Static MAC multicast FDB entries —maximum number of permanent multicast MAC entries configured into the FDB. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|---------------------|
| Syslog servers —maximum number of simultaneous Syslog servers that are supported. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |
| Syslog targets —maximum number of configurable Syslog targets. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |
| Telnet (number of sessions) —maximum number of simultaneous Telnet sessions. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| Virtual routers —maximum number of user-created virtual routers that can be created on a switch. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 63 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 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. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 960 * |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 16 (local-only VRs) |
| Virtual router protocols per VR —maximum number of routing protocols per VR. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 8 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | N/A |
| Virtual router protocols per switch —maximum number of VR protocols per switch. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720 | 64 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | N/A |
| VLAN aggregation —maximum number of port-VLAN combinations on any one superVLAN and all of its subVLANs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,000 |
| VLANs —includes all VLANs. Note: Only 4,092 user-configurable VLANs are supported. (VLAN 1 is the default VLAN, and 4,095 is the management VLAN, and you may not configure them.) | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,094 |
| VLANs (Layer 2) —maximum number of Layer 2 VLANs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 4,094 |
| VLANs (Layer 3) —maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| VLAN Port Interfaces (VPIF) —maximum number of VLAN port interfaces. | ExtremeSwitching 5320 | 53,328 |
| | ExtremeSwitching 5420 | 60,000 |
| | ExtremeSwitching 5520, 5720 | 131,585 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|--|-------|
| VLANs (maximum active port-based) —maximum active ports per VLAN when 4,094 VLANs are configured with the default license. | ExtremeSwitching 5520, 5720 | 32 |
| | ExtremeSwitching 5320, 5420 | 3 |
| VLANs (maximum active protocol-sensitive filters) —number of simultaneously active protocol filters in the switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |
| VLAN translation —maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 36 |
| 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. | ExtremeSwitching 5320, 5420, 5520, 5720 | 960 |
| VLAN translation —maximum number of translation VLAN pairs in an L2-only environment. | ExtremeSwitching 5320, 5420, 5520, 5720 | 960 |
| VMAN CEP —maximum number of CVIDs. Note: With 75% hash table utilization. | ExtremeSwitching 5320, 5420 | 768 |
| | ExtremeSwitching 5520, 5720 | 9,000 |
| VRRP (v2/v3-IPv4) (maximum instances) —maximum number of VRRP instances for a single switch. 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): ExtremeSwitching 5320, 5420, 5520, 5720 | 511 |
| | Scaled Mode (with groups): ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| | Sliced Mode: ExtremeSwitching 5320, 5420, 5520, 5720 | 511 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|--|---|
| VRRP (v3-IPv6) (maximum instances) —maximum number of VRRP instances for a single switch. (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): ExtremeSwitching 5320, 5420, 5520, 5720 | 511 |
| | Scaled Mode (with groups): ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| VRRP (v2/v3-IPv4/IPv6) (maximum VRID) —maximum number of unique VRID numbers per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN) —maximum number of VRIDs per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks) —maximum number of ping tracks per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| VRRP (maximum ping tracks) —maximum number of ping tracks per VRRP Instance under 128 VRRP instances. | ExtremeSwitching 5320, 5420, 5520, 5720 | 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. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 (20 centisecond or 1 second hello interval) |
| VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks) —maximum number of IP route tracks per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| VRRP (v2/v3-IPv4/IPv6) —maximum number of VLAN tracks per VLAN. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|--|----------------------------|
| 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. Note: On ExtremeSwitching 5520 and 5420 switches, every VNET reduces this limit by 1. Every (VPLS/PSTag VLAN) + port reduces the limit by 1 on all platforms. Every VXLAN Underlay Multicast Tunnel reduces this limit by 1. | ExtremeSwitching 5520, 5720 ExtremeSwitching 5320, 5420 | 2,048–4,000 200–375 |
| VXLAN —maximum tenant VLANs plus port combinations Note: Every (VPLS/PSTag VLAN) + port reduces the limit by 1. | ExtremeSwitching 5520, 5720 ExtremeSwitching 5320, 5420 | 4,096 200–375 |
| VXLAN —maximum static MAC to IP bindings. Note: Every FDB entry configured reduces this limit by 1. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64,000 |
| VXLAN —maximum RTEP IP addresses | ExtremeSwitching 5320, 5420, 5520, 5720 | 512 |
| VXLAN —maximum virtual networks with dynamic learning and OSPF extensions for VXLAN | ExtremeSwitching 5520, 5720 ExtremeSwitching 5320, 5420 | 4,000 375 |
| VXLAN —or replicator role, maximum number of attached leafs per switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 |

Table 9: Supported Limits for the Base License (continued)

| Metric | Product | Limit |
|---|---|-----------------------------|
| 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. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10 with 100 DACLS |
| XNV authentication —maximum number of VMs that can be processed (combination of local and network VMs). | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| XNV database entries —maximum number of VM database entries (combination of local and network VMs). | ExtremeSwitching 5320, 5420, 5520, 5720 | 16,000 |
| XNV database entries —maximum number of VPP database entries (combination of local and network VPPs). | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| XNV dynamic VLAN —Maximum number of dynamic VLANs created (from VPPs /local VMs). | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 |
| XNV local VPPs —maximum number of XNV local VPPs. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 ingress 512 egress |
| XNV policies/dynamic ACLs —maximum number of policies/dynamic ACLs that can be configured per VPP. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 ingress 4 egress |
| XNV network VPPs —maximum number of XNV network VPPs. ^p | ExtremeSwitching 5320, 5420, 5520, 5720 | 2,048 ingress 512 egress |

Premier License Limits

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

Table 10: Supported Limits for the Premier License

| Metric | Product | Limit |
|--|---|-------|
| Anycast RP Using PIM —maximum number of IPv4 Anycast RP set per VR. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| Anycast RP Using PIM —maximum number of IPv6 Anycast RP set per VR. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| Anycast RP Using PIM —RP peers per Anycast RP set. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10 |

Table 10: Supported Limits for the Premier License (continued)

| Metric | Product | Limit |
|--|---|---------|
| BGP (aggregates) —maximum number of BGP aggregates. | ExtremeSwitching 5520, 5720 | 256 |
| | ExtremeSwitching 5320, 5420 | 204 |
| BGP (networks) —maximum number of BGP networks. | ExtremeSwitching 5520, 5720 | 1,024 |
| | ExtremeSwitching 5320, 5420 | 820 |
| BGP (peers) —maximum number of BGP peers. Note: With default keepalive and hold timers. Note: Each BGPv4/BGPv6 peer handles a maximum of 50 routes. Note: ECMP should not be enabled for BGP. | ExtremeSwitching 5520 | 128 |
| | ExtremeSwitching 5720 | 300 |
| | ExtremeSwitching 5320, 5420 | 100 |
| | | |
| BGP (peer groups) —maximum number of BGP peer groups. | ExtremeSwitching 5520, 5720 | 64 |
| | ExtremeSwitching 5320, 5420 | 50 |
| BGP (policy entries) —maximum number of BGP policy entries per route policy. | ExtremeSwitching 5520, 5720 | 256 |
| | ExtremeSwitching 5320, 5420 | 204 |
| BGP (policy statements) —maximum number of BGP policy statements per route policy. | ExtremeSwitching 5520, 5720 | 1,024 |
| | ExtremeSwitching 5320, 5420 | 820 |
| BGP multicast address-family routes —maximum number of multicast address-family routes. | ExtremeSwitching 5520, 5720-MXW | 25,000 |
| | ExtremeSwitching 5320, 5420, 5720-MW | 20,000 |
| BGP (unicast address-family routes) —maximum number of unicast address-family routes. | ExtremeSwitching 5520, 5720-MXW (at default) | 25,000 |
| | ExtremeSwitching 5320, 5420, 5720-MW | 20,000 |
| | ExtremeSwitching 5720-MW (with ALPM enabled) | 163,000 |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 288,000 |
| BGP (non-unique routes) —maximum number of non-unique BGP routes. | ExtremeSwitching 5520 (with ALPM enabled) | 80,000 |
| | | |
| BGP (non-unique routes) —maximum number of non-unique BGP routes. | ExtremeSwitching 5520, 5720-MXW | 25,000 |
| | ExtremeSwitching 5320, 5420, 5720-MW | 20,000 |
| BGP ECMP —maximum number of equal cost paths per multipath for BGP and BGPv6. | ExtremeSwitching 5320, 5420, 5520 | 8 |
| | ExtremeSwitching 5720 | 64 |

Table 10: Supported Limits for the Premier License (continued)

| Metric | Product | Limit |
|--|---|------------|
| BGPv6 (unicast address-family routes) —maximum number of unicast address family routes. | ExtremeSwitching 5520, 5720-MW | 6,000 |
| | ExtremeSwitching 5720-MW (with ALPM enabled) | 107,000 |
| | ExtremeSwitching 5720-MXW | 10,000 |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 213,000 |
| | ExtremeSwitching 5320, 5420 | 4,800 |
| | ExtremeSwitching 5520 (with ALPM enabled) | 40,000 |
| BGPv6 (non-unique routes) —maximum number of non-unique BGP routes. | ExtremeSwitching 5520, 5720-MW | 18,000 |
| | ExtremeSwitching 5720-MXW | 24,000 |
| | ExtremeSwitching 5320, 5420 | 14,000 |
| EVPN EVI instances —maximum number of EVI instances. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,024 |
| GRE Tunnels —maximum number of GRE tunnels. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| IS-IS adjacencies —maximum number of supported IS-IS adjacencies. | ExtremeSwitching 5320, 5420, 5520, 5720 | 128 |
| IS-IS ECMP —maximum number of equal cost paths per multipath for IS-IS. | ExtremeSwitching 5320, 5420, 5520, 5720 | 2, 4, or 8 |
| IS-IS interfaces —maximum number of interfaces that can support IS-IS. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| IS-IS routers in an area —recommended maximum number of IS-IS routers in an area. | ExtremeSwitching 5320, 5420, 5520, 5720 | 256 |
| IS-IS route origination —recommended maximum number of routes that can be originated by an IS-IS node. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20,000 |
| IS-IS IPv4 L1 routes in an L1 router —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router. | ExtremeSwitching 5320, 5420, 5520, 5720 | 25,000 |
| IS-IS IPv4 L2 routes —recommended maximum number of IS-IS Level 2 routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 25,000 |
| IS-IS IPv4 L1 routes in an L1/L2 router —recommended maximum number of IS-IS Level 1 routes in an L1/L2 IS-IS router. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20,000 |

Table 10: Supported Limits for the Premier License (continued)

| Metric | Product | Limit |
|--|---|--------|
| IS-IS IPv6 L1 routes in an L1 router —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10,000 |
| IS-IS IPv6 L2 routes —recommended maximum number of IS-IS Level 2 routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10,000 |
| IS-IS IPv6 L1 routes in an L1/L2 router —recommended maximum number of IS-IS Level 1 routes in a L1/L2 router. | ExtremeSwitching 5320, 5420, 5520, 5720 | 10,000 |
| IS-IS IPv4/IPv6 L1 routes in an L1 router —recommended maximum number of IS-IS Level 1 routes in a Level 1 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20,000 |
| IS-IS IPv4/IPv6 L2 routes in an L2 router —recommended maximum number of IS-IS Level 2 routes in a Level 2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20,000 |
| IS-IS IPv4/IPv6 L1 routes in an L1/L2 router —recommended maximum number of IS-IS Level 1 routes in a Level 1/Level2 IS-IS router. The numbers documented are based on 50% IPv4 routes and 50% IPv6 routes. | ExtremeSwitching 5320, 5420, 5520, 5720 | 20,000 |
| MPLS RSVP-TE interfaces —maximum number of interfaces. | ExtremeSwitching 5520 | 32 |
| MPLS RSVP-TE ingress LSPs —maximum number of ingress LSPs. | ExtremeSwitching 5520 | 2000 |
| MPLS RSVP-TE egress LSPs —maximum number of egress LSPs. | ExtremeSwitching 5520 | 2000 |
| MPLS RSVP-TE transit LSPs —maximum number of transit LSPs. | ExtremeSwitching 5520 | 4000 |
| MPLS RSVP-TE paths —maximum number of paths. | ExtremeSwitching 5520 | 1000 |
| MPLS RSVP-TE profiles —maximum number of profiles. | ExtremeSwitching 5520 | 1000 |
| MPLS RSVP-TE EROs —maximum number of EROs per path. | ExtremeSwitching 5520 | 64 |

Table 10: Supported Limits for the Premier License (continued)

| Metric | Product | Limit |
|--|---|--------|
| MPLS LDP peers —maximum number of MPLS LDP peers per switch. | ExtremeSwitching 5520 | 128 |
| MPLS LDP adjacencies —maximum number of MPLS LDP adjacencies per switch. | ExtremeSwitching 5520 | 64 |
| MPLS LDP ingress LSPs —maximum number of MPLS LSPs that can originate from a switch. | ExtremeSwitching 5520 | 2048 |
| MPLS LDP-enabled interfaces —maximum number of MPLS LDP configured interfaces per switch. | ExtremeSwitching 5520 | 128 |
| MPLS LDP transit LSPs —maximum number of MPLS transit LSPs per switch. | ExtremeSwitching 5520 | 4000 |
| MPLS LDP egress LSPs —maximum number of MPLS egress LSPs that can terminate on a switch. | ExtremeSwitching 5520 | 4000 |
| MPLS static egress LSPs —maximum number of static egress LSPs. | ExtremeSwitching 5520 | 4000 |
| MPLS static ingress LSPs —maximum number of static ingress LSPs. | ExtremeSwitching 5520 | 4000 |
| MPLS static transit LSPs —maximum number of static transit LSPs | ExtremeSwitching 5520 | 4000 |
| MSDP active peers —maximum number of active MSDP peers. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |
| MSDP SA cache entries —maximum number of entries in SA cache. | ExtremeSwitching 5320, 5420F | 6,000 |
| | ExtremeSwitching 5420M | 8,000 |
| | ExtremeSwitching 5520, 5720 | 14,000 |
| MSDP maximum mesh groups —maximum number of MSDP mesh groups. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16 |
| OSPFv2/v3 ECMP —maximum number of equal cost multipath OSPFv2 and OSPFv3. | ExtremeSwitching 5320, 5420, 5520 | 8 |
| | ExtremeSwitching 5720 | 64 |
| OSPFv2 areas —as an ABR, how many OSPF areas are supported within the same switch. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |

Table 10: Supported Limits for the Premier License (continued)

| Metric | Product | Limit |
|---|--------------------------------------|--------|
| OSPFv2 external routes —recommended maximum number of external routes contained in an OSPF LSDB. | ExtremeSwitching 5520 | 5,000 |
| | ExtremeSwitching 5720 | 10,000 |
| | ExtremeSwitching 5320, 5420 | 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 5520, 5720 | 2,000 |
| | ExtremeSwitching 5320, 5420 | 1,600 |
| OSPFv2 interfaces —recommended maximum number of OSPF interfaces on a switch (active interfaces only). | ExtremeSwitching 5520, 5720 | 400 |
| | ExtremeSwitching 5320, 5420 | 320 |
| OSPFv2 links —maximum number of links in the router LSA. | ExtremeSwitching 5520, 5720 | 400 |
| | ExtremeSwitching 5320, 5420 | 320 |
| OSPFv2 neighbors —maximum number of supported OSPF adjacencies. | ExtremeSwitching 5520, 5720 | 128 |
| | ExtremeSwitching 5320, 5420 | 96 |
| OSPFv2 routers in a single area —recommended maximum number of routers in a single OSPF area. | ExtremeSwitching 5520 | 50 |
| | ExtremeSwitching 5720 | 100 |
| | ExtremeSwitching 5320, 5420 | 40 |
| OSPFv2 virtual links —maximum number of supported OSPF virtual links. | ExtremeSwitching 5520, 5720 | 32 |
| | ExtremeSwitching 5320, 5420 | 25 |
| OSPFv3 areas —as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching 5520 | 16 |
| | ExtremeSwitching 5720 | 100 |
| | ExtremeSwitching 5320, 5420 | 12 |
| OSPFv3 external routes —recommended maximum number of external routes. | ExtremeSwitching 5520, 5720-MXW | 10,000 |
| | ExtremeSwitching 5320, 5420, 5720-MW | 7,500 |
| OSPFv3 inter- or intra-area routes —recommended maximum number of inter- or intra-area routes. | ExtremeSwitching 5520 | 3,000 |
| | ExtremeSwitching 5720 | 4,000 |
| | ExtremeSwitching 5320, 5420 | 500 |
| OSPFv3 interfaces —maximum number of OSPFv3 interfaces (active interfaces only). | ExtremeSwitching 5520, 5720 | 256 |
| | ExtremeSwitching 5320, 5420 | 192 |
| OSPFv3 neighbors —maximum number of OSPFv3 neighbors. | ExtremeSwitching 5520, 5720 | 64 |
| | ExtremeSwitching 5320, 5420 | 48 |
| OSPFv3 virtual links —maximum number of OSPFv3 virtual links supported. | ExtremeSwitching 5520, 5720 | 16 |
| | ExtremeSwitching 5320, 5420 | 12 |

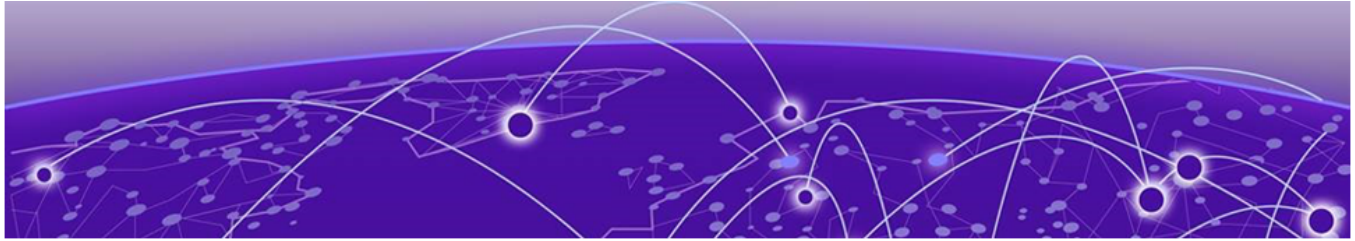
Table 10: Supported Limits for the Premier License (continued)

| Metric | Product | Limit |
|--|---|--|
| PIM IPv4 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| PIM IPv4 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 180 |
| PIM IPv4 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 3,000 (depends on policy file limits) |
| PIM IPv4 Limits —maximum number of multicast sources per group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 5,000 |
| PIM IPv4 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 145 |
| PIM IPv4 Limits —static rendezvous points. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |
| PIM IPv6 (maximum interfaces) —maximum number of PIM active interfaces. | ExtremeSwitching 5320, 5420, 5520, 5720 | 255 |
| PIM IPv6 Limits —maximum number of multicast sources per group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 1,750 |
| PIM IPv6 Limits —maximum number of multicast groups per dynamic rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 70 |
| PIM IPv6 Limits —maximum number of multicast groups per static rendezvous point. | ExtremeSwitching 5320, 5420, 5520, 5720 | 3,000 (depends on policy file limits) |
| PIM IPv6 Limits —maximum number of dynamic rendezvous points per multicast group. | ExtremeSwitching 5320, 5420, 5520, 5720 | 64 |
| PIM IPv6 Limits —maximum number of secondary addresses per interface. | ExtremeSwitching 5320, 5420, 5520, 5720 | 70 |
| PIM IPv6 Limits —static rendezvous points. | ExtremeSwitching 5320, 5420, 5520, 5720 | 32 |

Notes for Limits Tables

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

-
- ^c When there are BFD sessions with minimal timer, sessions with default timer should not be used.
 - ^f Effective capacity varies based on actual MAC addresses and VLAN IDs used and hash algorithm selected.
 - ^g Based on "configure forwarding internal-tables more l2".
 - ^h Based on "configure forwarding internal-tables more l3-and-ipmc".
 - ^j The limit depends on setting configured with configure iproute reserved-entries.
 - ^m The IPv4 and IPv6 multicast entries share the same hardware tables, so the effective number of IPv6 multicast entries depends on the number of IPv4 multicast entries present and vice versa.
 - ⁿ If IGMP and MLD are simultaneously configured on the switch, the number of effective subscribers supported are lessened accordingly.
 - ^o The total of all PBR next hops on all flow redirects should not exceed 4,096.
 - ^p The number of XNV authentications supported based on system ACL limitations.
 - ^q Based on "configure forwarding internal-tables more routes".
 - ^r Based on `configure forwarding internal-tables more routes ipv6-mask-length 128`.
 - ^s Based on `configure forwarding internal-tables more l3-and-ipmc` or `configure forwarding internal-tables l2-and-l3`.



Open Issues, Known Behaviors, and Resolved Issues

[Open Issues](#) on page 68

[Known Behaviors](#) on page 69

[Resolved Issues in Switch Engine 32.1](#) on page 71

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

Open Issues

The following are new open issues for supported features found in Switch Engine 32.1.

| Defect Number | Description |
|--|---|
| ExtremeSwitching 5720 Series Switches | |
| EXOS-31416 | Fix channelized port number issues on 5720 for EAPS. For EAPS, <code>show eaps shared-port</code> CLI output displays the EAPS neighbor shared port information improperly if the EAPS neighbor shared-port is a channelized port. The port is displayed as slot:port rather than slot:port:channel. |
| SummitStack | |
| EXOS-32096 | With only one ExtremeSwitching 5720 switch present in a 5720+5520 mixed stack, upgrading the Switch Engine version using the bundle 1st image (for example, <code>onie-summit_arm-32.1.1.6-bundle.1st</code>) fails with the following message: Error: Can not find any EPM peer at all The same error occurs when using the onie image if the 5720 slot number is not specified. Workaround: Download and install the onie image to the 5720 by specifying the 5720 slot number, followed by the summit_arm image for all remaining slots. For example: <code>download image 1.2.3.4 onie-32.1.1.6.x86_64.xos slot 1 install</code> <code>download image 1.2.3.4 summit_arm-32.1.1.6.xos install</code> |

Known Behaviors

The following is a limitation in Switch Engine system architecture that has yet to be resolved.

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

| Defect Number | Description |
|--|--|
| ExtremeSwitching 5720 Series Switches | |
| EXOS-31419 | In a 5720 stack, FDB entries of the rebooted slot remain programmed in the hardware when performing a Master failover for the 2nd time. This results in L2 traffic destined to those FDB entries being forwarded to their previously known port, rather than flooded to all ports on the VLAN. |
| EXOS-31633 | Dynamically changing the setting of a port's partition can cause the JUMBO packet counters associated with that port's partition group to stop incrementing. Workaround: Perform a configuration save and system reboot. |

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

| Defect Number | Description |
|---------------|---|
| EXOS-31691 | <p>If a 5720-VIM-2CE is inserted into a 5720 switch with the selected configuration file saved prior to VIM insertion, the following log messages are displayed when rebooted:</p> <pre><Noti:HAL.Card.Notice> VIM 5720-VIM-2CE is detected but does not match VIM 5720-VIM-6YE needed in slot 1 <Erro:cm.sys.LoadApplCfgObjFail> "devmgr" application failed to load "card_info" configuration object: Command timedout, please try again. <Erro:cm.sys.LoadApplCfgObjFail> "vlan" application failed to load "ports" configuration object: Port 1 out of range.</pre> <p>This occurs because, by default, 5720 configuration files assume either no VIM or a 5720-VIM-6YE. 5720-VIM-2CE has different port characteristics and requires reconfiguration of all port-related settings and port-VLAN assignments.</p> <p>Workaround:</p> <p>Before turning off the switch and inserting a 5720-VIM-2CE:</p> <ol style="list-style-type: none"> 1. Enter the save configuration as-script <script-name> command. 2. Turn off the switch. 3. Insert the 5720-VIM-2CE. 4. Turn on the switch. 5. Enter the run script <script-name> command. 6. Verify the port settings are correct. 7. Run the save configuration <file-name> command. |
| EXOS-32024 | <p>Extended mode operational diagnostics on the ExtremeSwitching 5720 series switch fails one of the traffic tests when run with perpetual PoE enabled. Normal mode operational diagnostics do not have this issue.</p> <p>Workaround:</p> <p>Disable inline-power perpetual before running operational diagnostics extended and re-enable inline-power perpetual after running operational diagnostics extended.</p> |
| EXOS-32025 | MACsec is not working on 5720-VIM-2CE ports when using the 1x100Gb partition option. |
| EXOS-32047 | MACsec jumbo packets greater than 4K bytes can be dropped as RX Jabber errors on 5720-VIM-2CE ports when using the 1x40Gb partition option. |

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

| Defect Number | Description |
|--------------------|--|
| EXOS-32111 | Connecting a Cat5 or Cat6 Ethernet cable from an Ethernet switch access port to the Console port on an active 5720 switch may cause the switch to hang in a boot cycle after reboot or power cycling the switch. Workaround: Ensure you connect the console port on the switch to the proper terminating equipment, for example, to a PC, VT terminal, terminal server, etc. |
| MACsec | |
| EXOS-32107 | A MACsec SAK rollover issue may occur when using cipher-suite GCM-AES-256 on MACsec-enabled access ports on ExtremeSwitching 5520 and 5720 switches. |
| SummitStack | |
| EXOS-31724 | In a stack setup, the Master and Backup slots have different default FEC settings. For 25G SFP28 ports in the stack, the default FEC setting on the Master is enabled, while the default on the Backup is disabled. Workaround: Configure the 25G Backup slot ports with FEC-enabled CL91. |

Resolved Issues in Switch Engine 32.1

The following issues were resolved in Switch Engine 32.1. Release 32.1 includes all fixes up to and including versions 31.6 and 31.7.

Table 12: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 32.1

| Defect Number | Description |
|----------------|--|
| General | |
| EXOS-31153 | Add an error message stating that access is restricted when a read-only user attempts to access the switch using Chalet. |
| EXOS-31192 | The SSH status occasionally becomes invalid after a switch reboot. |
| EXOS-31193 | When multiple actions are configured in the UDP forwarding profile, only the first entry's forwarding actions are carried out despite the received packet matching multiple entries. |
| EXOS-31498 | HAL process crashes with signal 6 after continuous port flap. |

Table 12: Resolved Issues, Platform-Specific, and Feature Change Requests (CRs) in 32.1 (continued)

| Defect Number | Description |
|--------------------|---|
| EXOS-31635 | The adjacency of a local interface IP address is shown as invalidated in debug hal show ipv4Adj output, which affects traffic flow. |
| EXOS-31946 | The switch reports an error log that contains the message <code>Update failed on unit 0 (No resources for operation), flags 0x40000100, flags2 0x0.</code> |
| SummitStack | |
| EXOS-20106 | With RADIUS authentication enabled on SummitStack, the command install image inactive fails to copy the active partition image to the inactive partition of the backup node. |
| EXOS-31183 | extremeStackMemberOperStatus OID returns an exception when the slot goes down. |