# Switch Engine v33.1.100 Release Notes

9039069-00 Rev AA
August 2024

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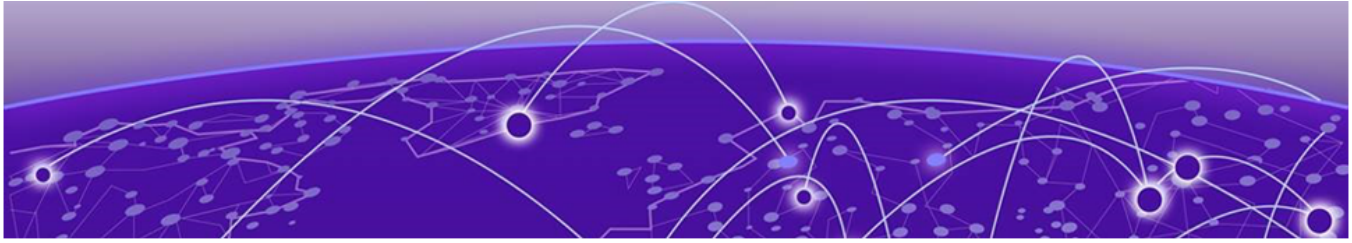


# Table of Contents

# Preface

Switch Engine v33.1.100 Release Notes by Extreme Networks, Inc., released in August 2024, provides new feature and software information, scaling limits, open and known deficiencies, and resolved issues.

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 Extreme Networks switches or SLX routers, the product is referred to as *the switch* or *the router*.

**Table 1: Notes and warnings**

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

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

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

**Table 2: Text**

| Convention | Description |
|---|---|
| `screen displays` | This typeface indicates command syntax, or represents information as it is displayed on the screen. |
| The words *enter* and *type* | When you see the word *enter* in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says *type*. |
| **Key** names | Key names are written in boldface, for example **Ctrl** or **Esc**. If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press **Ctrl**+**Alt**+**Del** |
| *Words in italicized type* | Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles. |
| NEW! | New information. In a PDF, this is searchable text. |

**Table 3: Command syntax**

| Convention | Description |
|---|---|
| **bold** text | Bold text indicates command names, keywords, and command options. |
| *italic* text | Italic text indicates variable content. |
| `[ ]` | Syntax components displayed within square brackets are optional.<br>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. |

**Table 3: Command syntax (continued)**

| Convention | Description |
|---|---|
| ... | Repeat the previous element, for example, *member*[*member*...]. |
| \ | In command examples, the backslash indicates a “soft” line break. When a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash. |

## Platform-Dependent Conventions

Unless otherwise noted, all information applies to all platforms supported by 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 User Enablement 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, email us at documentation@extremenetworks.com.

Provide as much detail as possible including the publication title, topic heading, and page number (if applicable), along with your comments and 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 2800. 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.

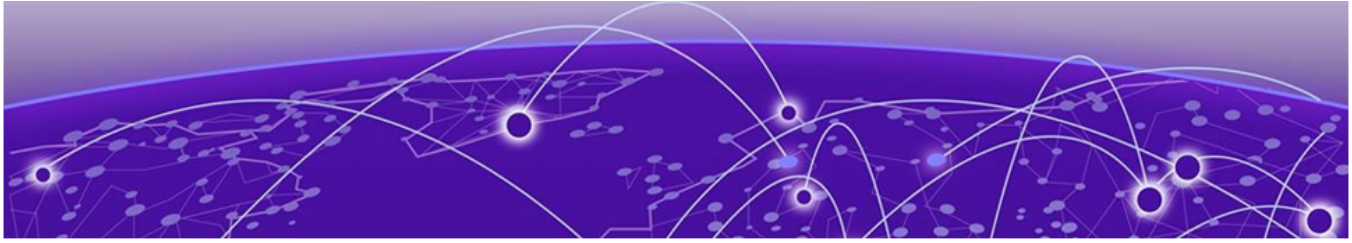
1. Go to The Hub.
2. In the list of categories, expand the **Product Announcements** list.
3. Select a product for which you would like to receive notifications.
4. Select **Subscribe**.
5. To select additional products, return to the **Product Announcements** list and repeat steps 3 and 4.

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

# Overview

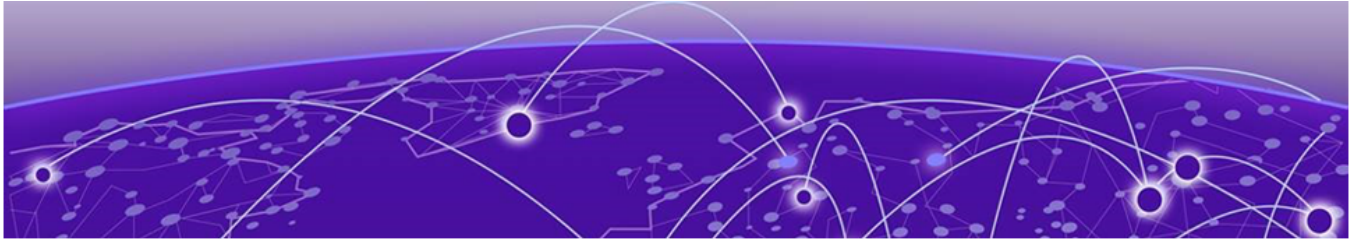
These release notes are intended for Korea Common Criteria V3 certification, and document Switch Engine 33.1.100, which adds features and resolves software deficiencies.

**Note**
Switch Engine 33.1.100 only supports the 5320 Series, 5420 Series, 5520 Series, 5720 Series, 7520 Series, and 7720 Series. The 4120 and the 4220 are not supported.



# Supported Platforms

The Switch Engine 33.1.100 release only supports the 5320 Series, 5420 Series, 5520 Series, 5720 Series, 7520 Series, and 7720 Series. The 4120 and the 4220 are not supported.



# Security Information



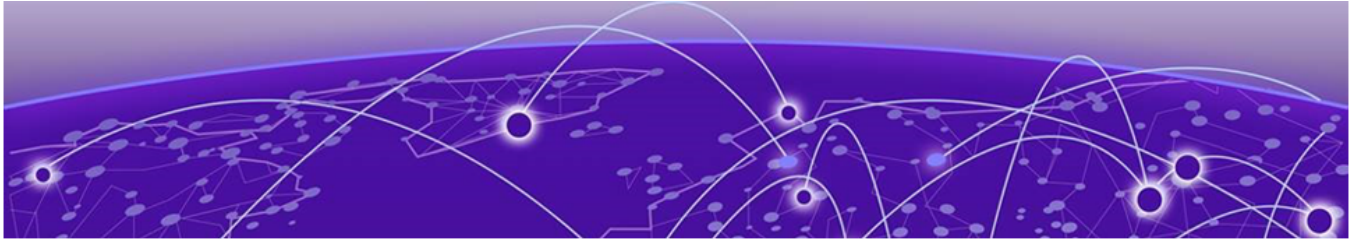
The following section covers important security information for Switch Engine 33.1.100.

## Linux Kernel

Switch Engine 33.1.100 uses Linux Kernel 5.10.

## OpenSSL Version

Switch Engine 33.1.100 uses FIPS openssl-3.0.10.



# 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 4: Default Switch Engine Settings**

| Feature | 31.6 and later | 32.4 and later |
|---|---|---|
| 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. | |
| ELRP | Disabled. | |

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

**Table 4: Default Switch Engine Settings (continued)**

| Feature | 31.6 and later | 32.4 and later |
|---|---|---|
| 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. | |
| Passwords | Plain text password entry not allowed. [a] | |
| PIM | Disabled. | |

**Table 4: Default Switch Engine Settings (continued)**

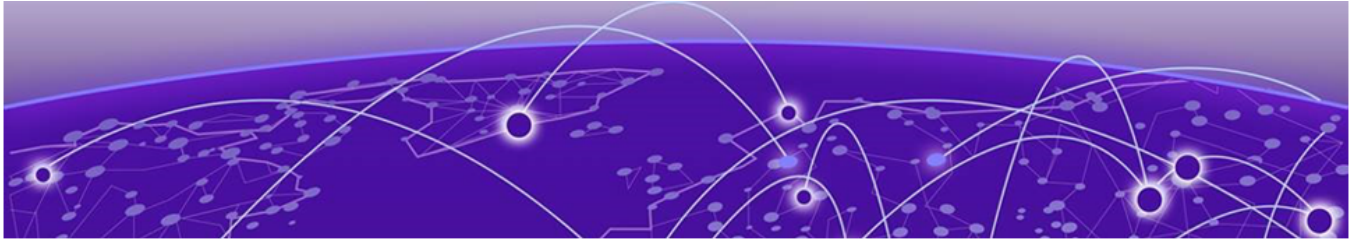
| Feature | 31.6 and later | 32.4 and later |
|---|---|---|
| PIM Snooping | Disabled. | |
| PoE<br>Fast PoE<br>Perpetual PoE | Enabled.<br>Disabled.<br>Disabled. | |
| RADIUS | Disabled for both switch management and network login. | |
| RIP | Disabled. | |
| RMON | Disabled. However, even in the disabled state, the switch responds to RMON queries and sets for alarms and events. | |
| sFlow | Disabled. | |
| SNMP server | Disabled. [a] | |
| SSH | Disabled. | |
| Stacking-support | Enabled. | Disabled for Extreme 7520 and 7720 only. |
| Stacking auto-discovery | Enabled. | |
| STP | Enabled. | |
| Syslog | Disabled. | |
| TACACS | Disabled. | |
| Telnet | Enabled. [a] | |
| VPEX IP Multicast Replication | BPE | |
| VPLS | All newly created VPLS instances are enabled. | |
| Watchdog | Enabled. | |
| Web HTTP server | Enabled. [a] | |
| Web HTTPS 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 5: Switch Engine Image Types (Prefixes)**

| Switches | Image File Type (Prefix) |
|---|---|
| ExtremeSwitching 5320, 5420, 5520 | `summit_arm`<br>Example: `summit_arm-31.1.0.3.xos` |
| ExtremeSwitching 5720, 7520, 7720 | `onie`<br>Example: `onie-32.1.1.6.x86_64.xos` |



# New and Corrected Features in Switch Engine 33.1.100

This section lists the new and corrected features supported in the 33.1.100 software:

## Updated Password Policies

The following additional password policies have been added in this release to provide more security for user and password combinations:

- The password cannot be the same as the user name.
- Characters in the password cannot be repeated in succession, for example "aa" or "11".
- Characters cannot be sequential beyond three characters, for example "abcd" or "1234".
- A password cannot be reused within 90 days.

## Updated SNMPv3 Password and Key policies

The following additional SNMPv3 password and key policies have been added in this release to provide more security:

- The encryption algorithm provides a security strength of 112 bits or more.
- Cryptographic keys are generated in a secure manner.
- Cryptographic keys that are created or used are safely destroyed.

## CLI Command to Enable or Disable All Management Access Modes

The following command can be used to enable or disable all the management access modes in the switch:

```
enable/disable switch access
```

Entering the previous command results in the following actions:

- Enable/disable ssh2 (which also disables SFTP)
- Enable/disable telnet
- Enable/disable web (http|https), which also disables REST-API
- Enable/disable SNMP access

## Confidential Information Stored on the Switch Is not Accessibe

The confidential information,sucg as all passwords, keys (symmetric and shared), and SNMP authentication details stored in the switch are not displayed in the configuration or CLI output with simple encoding, like BASE64. They are salted and encrypted by an entropy provider that is SP800-90B compliant.

## Administrator Notification When Audit Trail Exceeds a Limit

The administrator is notified when the audit trail size exceeds 90% or more of the disk capacity.

## FIPS Mode Is Enabled When Korean CC Mode Is Enabled

When Korean CC mode is enabled on the switch from the CLI, FIPS mode is also enabled. FIPS mode remains enabled when switch is unconfigured after it was configured for Korean CC mode.

## Notes for openssl Upgrade to 3.0.1

The following notes apply to an upgrade to openssl 3.0.1:

- rsaSHA based certificates are no longer supported; you must migrate to rsaSHA256 based certificates, such as SyslogTLS or RadiusTLS.
- SyslogTLS and RadiusTLS are only supported in TLSv1.2.
- TLSv1.3 support has been added for the HTTPS protocol.

The following TLS ciphers are supported in 33.1.100:

**TLSv1.2:**

TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256
TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384
TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256

**TLSv1.3:**

TLS_AES_256_GCM_SHA384
TLS_CHACHA20_POLY1305_SHA256
TLS_AES_128_GCM_SHA256
TLS_AES_128_CCM_8_SHA256
TLS_AES_128_CCM_SHA256

## CLI Commands for Security Profiles

This release has been updated so that a security profile can be configured for the switch for added security. When enabled, the profile remains enabled after upgrading the switch operating system and unconfiguring the switch.

The following command displays the security profile that is currently configured:

```
show security profile
```

In this example output, no profiles have been configured:

```
5420F-24S-4XE-SwitchEngine.10 # show security profile
Security profile (current)      : Off
Security profile (configured)   : Off
```

In this example output, the Korean CC profile has been configured and the switch Has been rebooted:

```
5420F-24S-4XE-SwitchEngine.2 # show security profile
Security profile (current)      : Korean Common Criteria
Security profile (configured)   : Korean Common Criteria
```

The following command configures the Korean CC security profile:

```
configure security profile [korean-cc]
```

The following command can be used to unconfigure the security profile:

**Note**
This command returns the switch to factory default settings.

```
unconfigure switch erase [all | nvram]
```

## Software and Hardware Self-Test CLI Commands

A new hardware self-test is run during system initialization. The self-test checks the status of the CPU, memory, flash memory, network interface, and power, and then creates a report with pass/fail results of the self-test. The report can be displayed in the CLI and summary results are included in the audit log.

The following command displays the hardware self-test results on a standalone switch:

```
show diagnostics boot-time
```

Example:

```
# show diagnostics boot-time

Switch: 5520-48T-ACDC
Time:   Thu May 23 18:47:34 2024

Component             Result  Details
====================  ======  ================================================
CPU                   PASS
Memory                PASS
Storage               PASS
Power                 FAIL    PSU-1: Powered On, PSU-2: Power Failed
Mgmt interface        PASS    Mgmt interface present, Link Up
```

There is an existing CLI command that performs a software self-test, consisting of software diagnostic checks, and then creates a summarized report on the results of the self-test. The report is displayed in the CLI command output and in the audit log. The same software self-tests are now performed as part of the boot process of the switch.

The following command displays the software self-test results on a standalone switch:

```
show process
```

Example:

```
# show process
Process Name     Version  Restart    State             Start Time        Group
-------------------------------------------------------------------------------
aaa              3.0.0.4     0    Ready        Sat Dec 11 22:42:28 2021  Vital
acl              3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
bfd              1.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
bgp              4.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
brm              1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
cfgmgr           3.0.0.21    0    Ready        Sat Dec 11 22:42:28 2021  Vital
cli              3.0.0.22    0    Ready        Sat Dec 11 22:42:28 2021  Vital
devmgr           3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
dirser           3.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Vital
dosprotect       3.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
dot1ag           1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
eaps             3.0.0.8     0    Ready        Sat Dec 11 22:42:28 2021  Vital
edp              3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
elrp             3.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
elsm             3.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
ems              3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
epm              3.0.0.4     0    Ready        Sat Dec 11 22:42:26 2021  Vital
erps             1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
esrp             3.0.0.4     0    Ready        Sat Dec 11 22:42:28 2021  Vital
ethoam           1.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
etmon            1.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
exacl            3.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exdhcpsnoop      1.0.0.1     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exdos            3.0.0.2     0    Ready        Sat Dec 11 22:42:26 2021  Kernel
exfib            1.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exfipSnoop       1.0.0.0     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exosmc           3.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exosq            3.0.0.2     0    Ready        Sat Dec 11 22:42:26 2021  Kernel
exsflow          1.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exsnoop          3.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
exsshd           6.5.1.69    0    Ready        Sat Dec 11 22:42:29 2021  Other
exvlan           3.0.0.2     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
fcoe             1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
fdb              7.1.0.0     0    Ready        Sat Dec 11 22:42:28 2021  Vital
gptp             1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
hal              3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
hclag            1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
idMgr            1.0.1.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
ipSecurity       1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
ipfix            3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
isis             1.0.0.2     0    Ready        Sat Dec 11 22:42:29 2021  Vital
ismb             1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
lacp             3.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
lldp             1.2.0.0     0    Ready        Sat Dec 11 22:42:28 2021  Vital
mcmgr            4.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
mpls             Not Started 0    No license   Not Started               Vital
mrp              1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
msdp             1.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
netLogin         2.1.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
netTools         3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
nettx            3.0.0.2     0    Ready        Sat Dec 11 22:42:26 2021  Kernel
nodealias        1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
nodealias_snoop  1.0.0.1     0    Ready        Sat Dec 11 22:42:27 2021  Kernel
nodemgr          3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
ntp              4.2.6.3     0    Ready        Sat Dec 11 22:42:29 2021  Vital
```

```
ospf             3.0.0.3     0    Ready        Sat Dec 11 22:42:28 2021  Vital
ospfv3           3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
otm              1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
pim              3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
polMgr           3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
policy           1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
pwmib            1.0.0.0     0    Ready        Sat Dec 11 22:42:28 2021  Vital
rip              3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
ripng            3.0.0.1     0    Ready        Sat Dec 11 22:42:28 2021  Vital
rtmgr            4.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
snmpMaster       4.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
snmpSubagent     3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
stp              3.0.4.4     0    Ready        Sat Dec 11 22:42:28 2021  Vital
techSupport      1.0.0.0     0    Ready        Sat Dec 11 22:42:28 2021  Vital
telnetd          3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Other
tftpd            3.0.0.2     0    Ready        Sat Dec 11 22:42:28 2021  Vital
thttpd           1.0.0.0     0    Ready        Sat Dec 11 22:42:29 2021  Other
twamp            1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
upm              1.0.0.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
vlan             4.1.0.3     0    Ready        Sat Dec 11 22:42:28 2021  Vital
vmt              1.0.1.1     0    Ready        Sat Dec 11 22:42:29 2021  Vital
vrrp             3.0.0.5     0    Ready        Sat Dec 11 22:42:28 2021  Vital
vsm              1.0.0.2     0    Ready        Sat Dec 11 22:42:29 2021  Vital
xmlc             1.0.1.0     0    Ready        Sat Dec 11 22:42:29 2021  Vital
xmld             1.0.0.0     0    Ready        Sat Dec 11 22:42:28 2021  Vital
```

# 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 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, 7520, and 7720 Series use 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`.

# Changing Your Network Operating System

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

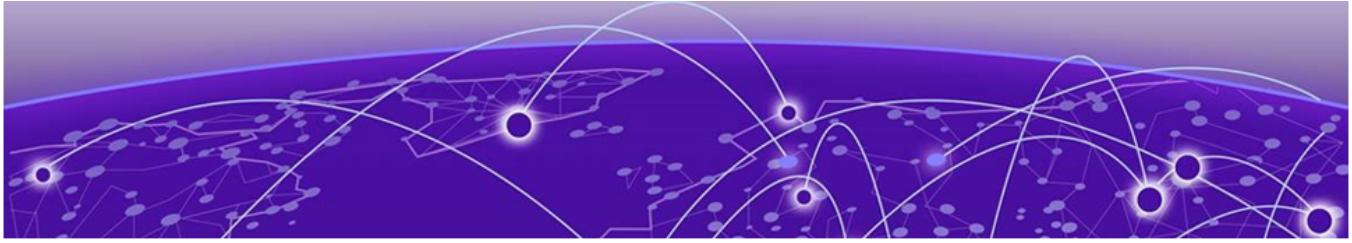
**Caution**
Changing your network operating systems deletes all configuration files, debug information, logs, events, and statistics information of the previous network operating system.

**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.

- 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.



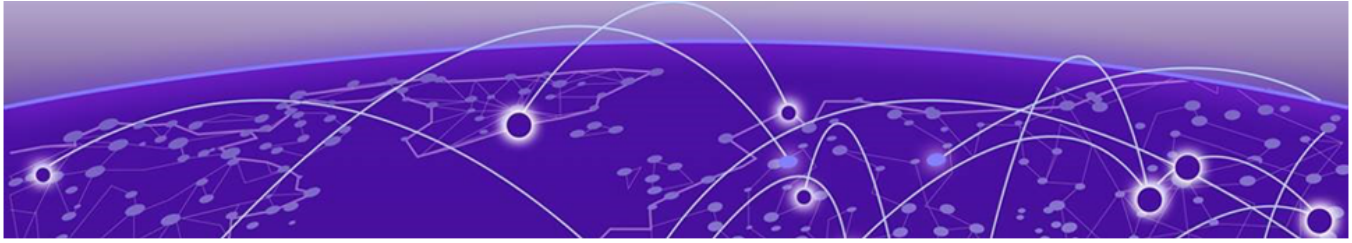
# Extreme Hardware/Software Compatibility and Recommendation Matrices

*ExtremeXOS and Switch Engine 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 ExtremeXOS versions for specific hardware platforms, see *ExtremeXOS and Switch Engine Release Recommendations*.

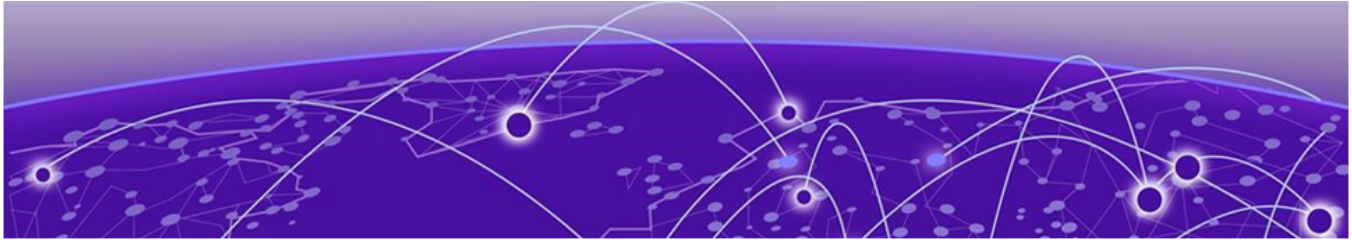
The latest versions of this and other ExtremeXOS guides are at: www.extremenetworks.com/documentation/.



# Supported MIBs

The Extreme Networks management information bases (MIBs) are located on the Extreme Portal in the Downloads section. Log in to the Extreme Portal to view and download.

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



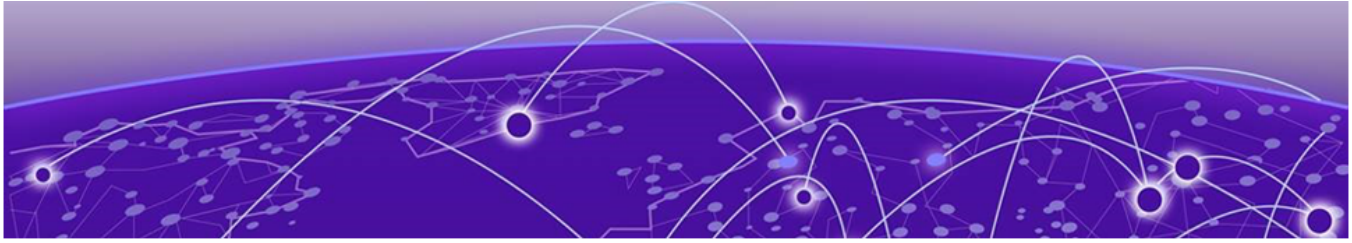
# Tested Third-Party Products

The following third-party products have been tested for Switch Engine 33.1.100.

## 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



This chapter summarizes the supported limits in Switch Engine 33.1.100.

**Note**
Switch Engine 33.1.100 only supports the 5320 Series, 5420 Series, 5520 Series, 5720 Series, 7520 Series, and 7720 Series. The 4120 and the 4220 are not supported.

## Limits Overview

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

- Base License Limits on page 29
- Premier License Limits on page 65

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.

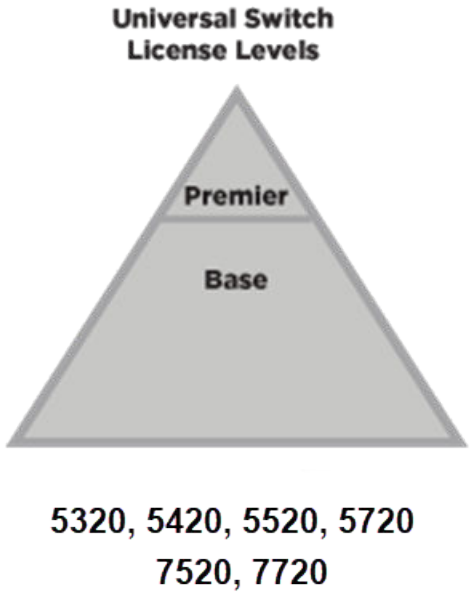



**Figure 1: License Levels for Universal Switches**

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.

**Note**
Switch Engine 33.1.100 only supports the 5320 Series, 5420 Series, 5520 Series, 5720 Series, 7520 Series, and 7720 Series. The 4120 and the 4220 are not supported.

**Table 6: Supported Limits for the Base License**

| Metric | Product | Limit |
|---|---|---|
| AAA (local)—maximum number of admin and local user accounts. | All platforms | 16 |
| Access lists (meters)—maximum number of meters. | 4120 | 512 ingress<br>128 egress |
| | 4220 | 2048 ingress<br>256 egress |
| | ExtremeSwitching 5320, 5420 | 6,144 ingress<br>512 egress |
| | Extreme Networks 7520, 7720 | 6,000 ingress<br>2,000 egress |
| | ExtremeSwitching 5520 | 2,048 ingress<br>512 egress |
| | ExtremeSwitching 5720-MW | 6,144 ingress<br>3,072 egress |
| | ExtremeSwitching 5720-MXW | 6,144 ingress<br>6,144 egress |
| Access lists (policies)—suggested maximum number of lines in a single policy file. | All platforms | 300,000 |
| Access lists (policies)—maximum number of rules in a single policy file in first stage (VFP). | ExtremeSwitching 5520, 5720 | 2,048 ingress only |
| | ExtremeSwitching 5320-48T/P, 5420, Extreme Networks 7520, 7720 | 1,024 ingress only |
| | 4120, 4220, ExtremeSwitching 5320-16P, 5320-24T-4X-XT | 512 ingress only |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Access lists (slices)**—number of ACL slices. | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 12 ingress<br>4 egress |
| | ExtremeSwitching 5320-48T/P, 5420, 5520 | 18 ingress<br>4 egress |
| | 4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P | 8 ingress<br>4 egress |
| **Access lists (slices)**—number of ACL slices in first stage (VFP). | All platforms | 4 ingress only |
| **ACL Per Port Meters**—number of meters supported per port. | All platforms | 16 |
| **ACL port ranges.** | All platforms | 32 |
| **Meters Packets-Per-Second Capable.** | All platforms | N/A |
| **AVB (audio video bridging)**—maximum number of active streams. | ExtremeSwitching 5320 (except extended temperature models), 5420 | 1,024 |
| | ExtremeSwitching 5520, 5720 | 4,096 |
| **BFD sessions (Software Mode)**—maximum number of BFD sessions. | All platforms except 4120 and 4220 (default timers—1 sec). | 512 |
| **BFD IPv4 sessions (Hardware Assisted)**—maximum number of IPv4 BFD sessions. | Extreme 7520, 7720 | 900 (PTP not enabled)<br>425 (PTP enabled)<br>256 (with 3 ms transmit interval) |
| **BFD IPv6 sessions (Hardware Assisted)**—maximum number of IPv6 BFD sessions. | Extreme 7520, 7720 | 425 (PTP not enabled) |
| **BGP (multicast address-family routes)**—maximum number of multicast address-family routes. | ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720 | 25,000 |
| | ExtremeSwitching 5420, 5720-MW | 20,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT) | 8,000 |
| | ExtremeSwitching 5320-24T-4X-XT. 5320-24T-24S-4XE-XT | 2,000 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **BGP (non-unique routes)** — maximum number of nonunique BGP routes. | ExtremeSwitching 5420, 5520, 5720MXW, Extreme Networks 7520, 7720 | 75,000 |
| | ExtremeSwitching 5720-MW | 60,000 |
| | ExtremeSwitching 5320 48T/P , 5320-24T-24S-4XE-XT | 36,000 |
| | ExtremeSwitching 5320 16P, 24T/P | 24,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 2,700 |
| **BGP (peers)**—maximum number of BGP peers. | All platforms except 4120 and 4220. | 2 |
| **BGP (unicast address-family routes)**—maximum number of unicast address-family routes. | ExtremeSwitching 5420, 5520, 5720MXW, Extreme Networks 7520, 7720 (at default) | 25,000 |
| | ExtremeSwitching 5720-MW | 20,000 |
| | ExtremeSwitching 5320 48T/P , 5320-24T-24S-4XE-XT | 12,000 |
| | ExtremeSwitching 5320 16P, 24T/P | 8,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 900 |
| | ExtremeSwitching 5720-MW (with ALPM enabled) | 163,000 |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 288,000 |
| | ExtremeSwitching 5520 (with ALPM enabled) | 80,000 |
| **BGP auto-peering**—maximum number of auto-peering nodes and VTEPs. | All platforms except 4120 and 4220. | 64 |
| **BGP auto-peering attached IPv4 hosts**— maximum number of attached IPv4 hosts. | All platforms except 4120 and 4220. | 64,000 |
| **BGP auto-peering attached IPv6 hosts**— maximum number of attached IPv6 hosts. | All platforms except 4120 and 4220. | 8,000 |
| **BGP auto-peering ECMP**—maximum number of equal cost multipath for auto-peering.<br><br>**Note:** * Subject to the limitation imposed by the number of physical ports on a switch. | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 16* |
| | ExtremeSwitching 5320, 5420, 5520 | 4* |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **BGP auto-peering maximum IPv4 prefixes with ECMP**—Maximum number of IPv4 Network prefixes with ECMP. | ExtremeSwitching 5320, 5420, 5520, 5720 | 16,000 |
| | Extreme Networks 7520, 7720 | 64,000 |
| **BGP auto-peering maximum IPv6 prefixes with ECMP**—Maximum number of IPv6 Network prefixes with ECMP. | ExtremeSwitching 5320, 5420, 5520, 5720 | 254 |
| | Extreme Networks 7520, 7720 | 64,000 |
| **BGP auto-peering MLAG peers**—maximum MLAG peers per AutoBGP node. | All platforms except 4120 and 4220. | 1 |
| **BGP auto-peering VRFs**—maximum number of VRFs. | All platforms except 4120 and 4220. | 64 |
| **BGP auto-peering EVPN instances**—maximum EVPN instances. | All platforms except 4120 and 4220. | 1,024 |
| **BGPv6 (unicast address family routes)**—maximum number of unicast address family routes. | ExtremeSwitching 5320 48T/P, 5320-24T-24S-4XE-XT , 5420, 5520, 5720-MW | 6,000 |
| | ExtremeSwitching 5720-MW (with ALPM enabled) | 107,000 |
| | ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720 | 10,000 |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 213,000 |
| | ExtremeSwitching 5520 (with ALPM enabled) | 40,000 |
| | ExtremeSwitching 5320 16P, 24T/P | 4,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 400 |
| **BGPv6 (non-unique routes)** — maximum number of nonunique BGP routes. | ExtremeSwitching 5420, 5520, 5720-MW | 18,000 |
| | ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720 | 30,000 |
| | ExtremeSwitching 5320 | 14,000 |
| | ExtremeSwitching 5320 16P, 24T/P | 12,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 1,200 |
| **BOOTP/DHCP relay**—maximum number of BOOTP or DHCP servers per virtual router. | All platforms | 8 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **BOOTP/DHCP relay**—maximum number of BOOTP or DHCP servers per VLAN. | All platforms | 8 |
| **BOOTP/DHCP relay**—maximum number of DHCPv4/v6 relay agents | All platforms | 4,000 |
| **Connectivity fault management (CFM)**—maximum number or CFM domains. | All platforms | 8 |
| **CFM**—maximum number of CFM associations. | All platforms | 256 |
| **CFM**—maximum number of CFM up end points. | All platforms | 32 |
| **CFM**—maximum number of CFM down end points. | All platforms | 32 |
| **CFM**—maximum number of CFM remote end points per up/down end point. | All platforms | 2,000 |
| **CFM**—maximum number of dot1ag ports. | All platforms | 128 |
| **CFM**—maximum number of CFM segments. | All platforms | 1,000 |
| **CFM**—maximum number of MIPs. | All platforms | 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. | 4120, 4220, ExtremeSwitching 5320, 5420, 5720, Extreme Networks 7520, 7720<br>ExtremeSwitching 5520 | 8,192<br>9,215 |
| **Data Center Bridging eXchange (DCBX) protocol Type Length Value (TLVs)**—maximum number of DCBX application TLVs. | All platforms | 8 |
| **DHCPv6 Prefix Delegation Snooping**—Maximum number of DHCPv6 prefix delegation snooped entries. | All platforms | 256 (with underlying protocol RIPng)<br>128 (with underlying protocol OSPFv3)<br>1,024 (with static routes) |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **DHCP snooping entries**—maximum number of DHCP snooping entries. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720 | 2,050 |
| | Extreme Networks 7520, 7720 | 2,048 |
| **Dynamic ACLs**—maximum number of ACLs processed per second.<br><br>**Note:** Limits are load-dependent. | All platforms | |
| | with 50 DACLs | 10 |
| | with 500 DACLs | 5 |
| **EAPS domains**—maximum number of EAPS domains.<br><br>**Note:** An EAPS ring that is being spatially reused cannot have more than four configured EAPS domains. | Extreme Networks 7520, 7720 | 4 |
| | ExtremeSwitching 5720 | 128 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 32 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520 | 64 |
| **EAPSv1 protected VLANs**—maximum number of protected VLANs. | ExtremeSwitching 5320-24T/P, 5320-16P | 1,000 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 2,000 |
| **EAPSv2 protected VLANs**—maximum number of protected VLANs. | ExtremeSwitching 5320, 5420, 5520 | 500 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 2,000 |
| **ELSM (vlan-ports)**—maximum number of VLAN ports. | 4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P | 4,000 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 5,000 |
| **ERPS domains**—maximum number of ERPS domains with or without CFM configured. | All platforms except 4120 and 4220. | 32 |
| **ERPSv1 protected VLANs**—maximum number of protected VLANs. | ExtremeSwitching 5320-24T/P, 5320-16P | 1,000 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 2,000 |
| **ERPSv2 protected VLANs**—maximum number of protected VLANs. | ExtremeSwitching 5320-24T/P, 5320-16P | 500 |
| | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 2,000 |
| **ESRP groups**—maximum number of ESRP groups | All platforms except 4120 and 4220. | 32 |
| **ESRP domains**—maximum number of ESRP domains. | All platforms except 4120 and 4220. | 64 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **ESRP L2 VLANs**—maximum number of ESRP VLANs without an IP address configured. | All platforms except 4120 and 4220. | 1,000 |
| **ESRP L3 VLANs**—maximum number of ESRP VLANs with an IP address configured. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 511 |
| | ExtremeSwitching 5320-24T/P, 5320-16P | 509 |
| **ESRP (maximum ping tracks)**—maximum number of ping tracks per VLAN. | All platforms except 4120 and 4220. | 8 |
| **ESRP (IP route tracks)**—maximum IP route tracks per VLAN. | All platforms except 4120 and 4220. | 8 |
| **ESRP (VLAN tracks)**—maximum number of VLAN tracks per VLAN. | All platforms except 4120 and 4220. | 1 |
| **Extended Edge Switching maximum BPEs**—maximum number of attached bridge port extenders (BPEs). | ExtremeSwitching 5520, 7520-48Y | 48 |
| | ExtremeSwitching 5420 | 20 |
| **Extended Edge Switching maximum cascade ports**—maximum number of upstream ports on bridge port extenders (BPEs). | ExtremeSwitching 5420, 5520, 7520-48Y | 2 on V400-24 and V300 models<br>4 on V400-48 models |
| **Extended Edge Switching maximum tiers**—maximum number of cascade levels (tiers) of bridge port extenders (BPEs). | ExtremeSwitching 5420, 5520, 7520-48Y | 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, 7520-48Y | 8 |
| **Extended Edge Switching maximum VLANs**—maximum number of VLANs - Includes all VLANs | ExtremeSwitching 5520, 7520-48Y | 4,094 |
| | ExtremeSwitching 5420 | 1,024 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Extended Edge Switching VLAN+ port memberships**—maximum number of VLAN+ (extended) port memberships. | ExtremeSwitching 5520, 7520-48Y | 12,000 in hash mode (default)<br>131,000 in port-group mode |
| | ExtremeSwitching 5420 | 8,750 in hash mode (default)<br>131,617 in port-group mode |
| **Forwarding rate**—maximum L3 software forwarding rate. | 4220 | 9.274 |
| | 4120 | 12,624 |
| | 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 |
| | Extreme Networks 7520, 7720 | 34,813 pps |
| **FDB (unicast blackhole entries)**—maximum number of unicast blackhole FDB entries. | 4120 | 16,384 |
| | 4220, 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, Extreme Networks 7520, 7720 | 294,912 [f] |
| **FDB (multicast blackhole entries)**—maximum number of multicast blackhole FDB entries. | ExtremeSwitching 5520, 5720-MW, Extreme Networks 7520, 7720 | 4,096 |
| | ExtremeSwitching 5420 | 1,024 |
| | 4120, 4220, ExtremeSwitching 5320 | 1,000 |
| | ExtremeSwitching 5720-MXW | 16,000 |
| **FDB (maximum L2 entries)**—maximum number of MAC addresses. | 4120 | 16,384 |
| | 4220, ExtremeSwitching 5320 | 32,000 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| | ExtremeSwitching 5420M | 65,536 |
| | ExtremeSwitching 5420F | 32,768 [g] |
| | ExtremeSwitching 5520 | 114,688 [g] |
| | ExtremeSwitching 5720-MW | 163,840 [g] |
| | ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720 | 294,912 [g] |
| FDB (maximum L2 entries)—maximum number of multicast FDB entries. | ExtremeSwitching 5520, Extreme Networks 7520, 7720 | 4,096 |
| | 4120, 4220, ExtremeSwitching 5320, 5420 | 1,024 |
| | ExtremeSwitching 5720 | 16,000 |
| Identity management—maximum number of Blacklist entries. | All platforms except 4120 and 4220. | 512 |
| Identity management—maximum number of Whitelist entries. | All platforms except 4120 and 4220. | 512 |
| Identity management—maximum number of roles that can be created. | All platforms except 4120 and 4220. | 64 |
| Identity management—maximum role hierarchy depth allowed. | All platforms except 4120 and 4220. | 5 |
| Identity management—maximum number of attribute value pairs in a role match criteria. | All platforms except 4120 and 4220. | 16 |
| Identity management—maximum number of child roles for a role. | All platforms except 4120 and 4220. | 8 |
| Identity management—maximum number of policies/dynamic ACLs that can be configured per role. | All platforms except 4120 and 4220. | 8 |
| Identity management—maximum number of LDAP servers that can be configured. | All platforms except 4120 and 4220. | 8 |
| Identity management—maximum number of Kerberos servers that can be configured. | All platforms except 4120 and 4220. | 20 |
| Identity management—maximum database memory size. | All platforms except 4120 and 4220. | 512 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Identity management**—recommended number of identities per switch.<br><br>**Note:** Number of identities per switch is for a default identity management database size (512 Kbytes) across all platforms. | All platforms except 4120 and 4220. | 100 |
| **Identity management**—recommended number of ACL entries per identity.<br><br>**Note:** Number of ACLs per identity, based on system ACL limitation. | All platforms except 4120 and 4220. | 20 |
| **Identity management**—maximum number of dynamic ACL entries configured as an individual dynamic rule, or as an ACL entry in a policy file. | All platforms except 4120 and 4220. | 500 |
| **IGMP snooping per VLAN filters**—maximum number of VLANs supported in per-VLAN IGMP snooping mode. | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720 | 1,500 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 500 |
| | 4120 | 48 |
| **IGMPv1/v2 SSM-map entries**—maximum number of IGMPv1/v2 SSM mapping entries. | All platforms except 4120 and 4220. | 6 |
| **IGMPv1/v2 SSM-map entries**—maximum number of sources per group in IGMPv1/v2 SSM mapping entries. | All platforms except 4120 and 4220. | 50 |
| **IGMPv2 subscriber**—maximum number of IGMPv2 subscribers per port.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, Extreme Networks 7520, 7720 ,ExtremeSwitching 5720,ExtremeSwitching 5520 | 4,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 250 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **IGMPv2 subscriber**—maximum number of IGMPv2 subscribers per switch.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520 | 20,000 |
| | ExtremeSwitching 5720-MW, Extreme Networks 7520, 7720 | 45,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 256 |
| **IGMPv3 maximum source per group**—maximum number of source addresses per group. | All platforms | 250 |
| **IGMPv3 subscriber**—maximum number of IGMPv3 subscribers per port.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720<br>4220, ExtremeSwitching 5320-24T-4X-XT<br>4120 | 4,000<br>1,000<br>250 |
| **IGMPv3 subscriber**—maximum number of IGMPv3 subscribers per switch.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520 | 20,000 |
| | ExtremeSwitching 5720-MW, Extreme Networks 7520, 7720 | 45,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 256 |
| **IP ARP entries in software**—maximum number of IP ARP entries in software.<br><br>**Note:** Might be limited by hardware capacity of FDB (maximum L2 entries). | 4120 | 400 |
| | 4220 | 4,000 |
| | ExtremeSwitching 5420F models | 12,000 |
| | ExtremeSwitching 5420M models | 24,000 |
| | ExtremeSwitching 5320, 5520 | 74,750 [h] |
| | ExtremeSwitching 5720-MW | 100,000 |
| | Extreme Networks 7520, 7720 | 184,318 (up to) |
| | ExtremeSwitching 5720-MXW | 221,000 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **IPv4 ARP entries in hardware with minimum LPM routes**—maximum recommended number of IPv4 ARP entries in hardware, with minimum LPM routes present. Assumes number of IP route reserved entries is 100 or less. | 4120 | 397 |
| | 4220 | 4,000 |
| | 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] |
| | Extreme Networks 7520, 7720 | 146,000 [h] |
| | ExtremeSwitching 5720-MXW | 172,000 [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." | 4120 | 384 |
| | 4220 | 3,000 |
| | 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] |
| | Extreme Networks 7520, 7720 | 125,000 [h] |
| | ExtremeSwitching 5720-MXW | 156,000 [h] |
| **IP flow information export (IPFIX)**—number of simultaneous flows. | 4120, 4220, ExtremeSwitching 5320 | N/A |
| | ExtremeSwitching 5420 | 4,000 (IPv4 and IPv6 flows) |
| | ExtremeSwitching 5520 | 32,000 (IPv4 flows)<br>18,000 (IPv6 flows) |
| | ExtremeSwitching 5720 | 257,000 (IPv4 flows)<br>112,000 (IPv6 flows) |

**Table 6: 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. | 4120 | 450 |
| | 4220 | 4,000 |
| | 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] |
| | Extreme Networks 7520, 7720 | 241,000 (up to) [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 5520 | 81,000 |
| | 4120, 4220, ExtremeSwitching 5320, 5420 | 25,000 |
| | ExtremeSwitching 5720-MW | 163,000 |
| | ExtremeSwitching 5720-MXW | 288,000 |
| | Extreme Networks 7520, 7720 | 350,000 |
| **IPv4 routes (LPM entries in hardware)**— number of IPv4 routes in hardware. | 4120 | 64 |
| | 4220 | 992 |
| | ExtremeSwitching 5320-16T/P, 5320-24T/P | 8,000 |
| | ExtremeSwitching 5320-48T/P, 5420 | 12,000 |
| | ExtremeSwitching 5520 | 81,000 [q] |
| | ExtremeSwitching 5720-MW | 163,000 [q] |
| | Extreme Networks 7520, 7720 | 262,000 up to 350,000 [q] |
| | ExtremeSwitching 5720-MXW | 288,000 [q] |
| **IPv6 6in4 tunnel**—maximum number of IPv6 6in4 tunnels. | All platforms except 4120 and 4220 | 255 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **IPv6 6to4 tunnel**—maximum number of IPv6 6to4 tunnels. | All platforms except 4120 and 4220 | 1 (per virtual router) |
| **IPv6 addresses on an interface**—maximum number of IPv6 addresses on an interface. | All platforms | 255 |
| **IPv6 addresses on a switch**—maximum number of IPv6 addresses on a switch. | All platforms | 2,048 |
| **IPv6 host entries in hardware**—maximum number of IPv6 neighbor entries in hardware. | 4120 | 200 |
| | 4220 | 2,000 |
| | 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] |
| | Extreme Networks 7520, 7720 | 57,000 [h] |
| | 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 5520 | 18,000 [q] |
| | 4120, 4220, ExtremeSwitching 5320, 5420 | 25,000 |
| | ExtremeSwitching 5720-MW | 07,000 [q] |
| | Extreme Networks 7520, 7720 | 1196,000 [q] |
| | ExtremeSwitching 5720-MXW | 213,000 [q] |
| **IPv6 routes (LPM entries in hardware)**—maximum number of IPv6 routes in hardware. | 4120 | 32 |
| | 4220 | 512 |
| | ExtremeSwitching 5520 | 40,000 [q] |
| | ExtremeSwitching 5420 | 6,000 |
| | ExtremeSwitching 5720-MW | 107,000 [q] |
| | Extreme Networks 7520, 7720 | 131,000 up to 196,000 [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<br>Extreme Networks 7520, 7720 | 8,192 [r]<br>32,000 [r] |
| | ExtremeSwitching 5720-MW | 16,000 [r] |
| | ExtremeSwitching 5720-MXW | 24,000 [r] |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **IPv6 route sharing in hardware**—route mask lengths for which ECMP is supported in hardware. | 4120, 4220, ExtremeSwitching 5320, 5420 | 0–64, >64 single path only |
| | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 0–128 [r] |
| **IP router interfaces**—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | 4120<br>ExtremeSwitching 5320-48T/P, 5420 | 126<br>1,533 |
| | 4220, ExtremeSwitching 5320-24T/P, 5320-16P | 509 |
| | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 2,048 |
| **IP multicast static routes**—maximum number of permanent multicast IP routes. | All platforms | 1,024 |
| **IP unicast static routes**—maximum number of permanent IP unicast routes. | All platforms | 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. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520 | 2, 4, or 8 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 2, 4, 8, 16, 32, or 64 |

**Table 6: 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. | 4120 | 62 (if maximum gateways is 2, 4, or 8) |
| | 4220, ExtremeSwitching 5320<br><br>**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. | 124 (if maximum gateways is 2)<br>124 (if maximum gateways is 4)<br>60 (if maximum gateways is 8) |
| | ExtremeSwitching 5420<br><br>**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. | 510 (if maximum gateways is 2)<br>254 (if maximum gateway is 4)<br>126 (if maximum gateways is 8) |
| | ExtremeSwitching 5520<br><br>**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. | 2,046 (if maximum gateways is 2)<br>1,022 (if maximum gateway is 4)<br>510 (if maximum gateways is 8) |
| | ExtremeSwitching 5720<br>if maximum gateways is 2<br>if maximum gateways is 4<br>if maximum gateways is 8<br>if maximum gateways is 16 (default)<br>if maximum gateways is 32<br>if maximum gateways is 64 | 2,046<br>2,046<br>2,046<br>1,022<br>510<br>254 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| | **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. | |
| | Extreme Networks 7520, 7720<br>if maximum gateways is 2<br>if maximum gateways is 4<br>if maximum gateways is 8<br>if maximum gateways is 16 (default)<br>if maximum gateways is 32<br>if maximum gateways is 64<br>**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. | 4,094<br>4,094<br>2,046<br>1,022<br>510<br>254 |
| **IP multinetting (secondary IP addresses)**—maximum number of secondary IP addresses per VLAN. | All platforms | 255 |
| **Jumbo frames**—maximum size supported for jumbo frames, including the CRC. | All platforms | 9,216 |
| **Layer-2 IPMC forwarding caches**—(IGMP/MLD/PIM snooping) in mac-vlan mode.<br>**Note:**<br>• The internal lookup table configuration used is "l2-and-l3".<br>• IPv6 and IPv4 L2 IPMC scaling is the same for this mode.<br>• Layer-2 IPMC forwarding cache limits—(IGMP/MLD/PIM snooping) in mixed-mode are the same.<br>4120 and 4220 do not support PIM snooping. | 4120 | 16,000 |
| | 4220, ExtremeSwitching 5320 | 32,000 |
| | ExtremeSwitching 5420 | 64,000 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| | ExtremeSwitching 5520 | 32,768 |
| | ExtremeSwitching 5720-MW | 49,152 |
| | Extreme Networks 7520, 7720 | 73,000 |
| | ExtremeSwitching 5720-MXW | 81,920 |
| Layer-3 IPv4 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled).<br><br>Note:<br>• Limit value is the same for MVR senders, PIM Snooping entries. PIM SSM cache, IGMP senders, PIM cache.<br>• Assumes source-group-vlan mode as look up key.<br>• Layer 3 IPMC cache limit in mixed mode also has the same value. | 4120 | 256 |
| | 4220 | 2,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT) | 8,000 |
| | ExtremeSwitching 5420M | 12,000 |
| | ExtremeSwitching 5420F | 6,000 |
| | ExtremeSwitching 5520 | 43,000 |
| | ExtremeSwitching 5720-MW | 61,000 |
| | Extreme Networks 7520, 7720 | 104,000 |
| | ExtremeSwitching 5720-MXW | 110,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 2000 |
| Layer-3 IPv6 Multicast—maximum number of <S,G,V> entries installed in the hardware (IP multicast compression enabled). | 4120 | 128 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| Note:<br>• Limit value is the same for MLD sender per switch, PIM IPv6 cache.<br>• Assumes source-group-vlan mode as lookup key. | 4220 | 1,000 |
| 4120 and 4220 do not support PIM snooping, but MLD cache is supported in the hardware. | ExtremeSwitching 5320 (except 5320-24T-4X-XT) | 4,000 |
| | ExtremeSwitching 5420M | 6,000 |
| | ExtremeSwitching 5420F | 3,000 |
| | ExtremeSwitching 5520 | 21,500 |
| | ExtremeSwitching 5720-MW | 30,500 |
| | Extreme Networks 7520, 7720 | 52,000 |
| | ExtremeSwitching 5720-MXW | 55,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| Load sharing—maximum number of load sharing groups.<br><br>Note: The actual number of load-sharing groups that can be configured is limited by the number of physical ports present in the switch or SummitStack. | All platforms | 128 |
| Load sharing—maximum number of ports per load-sharing group. | For standalone and stacked: 4120, 4220, ExtremeSwitching 5320, 5420 | 8 |
| | For standalone: ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 32 |
| | For stacked: ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 64 |
| Logged messages—maximum number of messages logged locally on the system. | All platforms | 20,000 |
| MAC-based security—maximum number of MAC-based security policies. | All platforms | 1,024 |

**Table 6: 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. | All platforms | 64 (static MAC locking stations)<br>600 (first arrival MAC locking stations) |
| **Meters**—maximum number of meters supported. | All platforms | 2,048 |
| **Maximum mirroring instances.** | All platforms except 4120.<br><br>4120 | 4 total, 2 egress<br><br>6 defined, max 4 enabled (max 1 egress) |
| **Mirroring (filters)**—maximum number of mirroring filters.<br><br>**Note:** This is the number of filters across all the active mirroring instances. | All platforms | 128 |
| **Mirroring, one-to-many (filters)**—maximum number of one-to-many mirroring filters.<br><br>**Note:** This is the number of filters across all the active mirroring instances. | All platforms | 128 |
| **Mirroring, one-to-many (monitor port)**—maximum number of one-to-many monitor ports. | All platforms | 16 |
| **MLAG ports**—maximum number of MLAG ports allowed.<br><br>**Note:** The number of MLAG ports that can be configured is limited by the number of physical ports present in the system. | ExtremeSwitching 5320 | 55 |
| | ExtremeSwitching 5720 | 63 |
| | ExtremeSwitching 5420, 5520 | 59 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| | Extreme Networks 7520, 7720 | 61 |
| | Stacking<br>**Note:** Maximum user ports | 1 |
| **MLAG peers**—maximum number of MLAG peers allowed. | All platforms | 2 |
| **Multicast listener discovery (MLD) snooping per-VLAN filters**—maximum number of VLANs supported in per-VLAN MLD snooping mode. | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720 | 1,500 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 250 |
| | 4120 | 32 |
| **Multicast listener discovery (MLD)v1 subscribers**—maximum number of MLDv1 subscribers per port.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720 | 4,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 128 |
| **Multicast listener discovery (MLD)v1 subscribers**—maximum number of MLDv1 subscribers per switch.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520 | 10,000 |
| | ExtremeSwitching 5720-MW | 30,000 |
| | Extreme Networks 7520, 7720 | 45,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 256 |
| **Multicast listener discovery (MLD)v2 subscribers**—maximum number of MLDv2 subscribers per port.[n] | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520, 5720, Extreme Networks 7520, 7720 | 4,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 128 |
| **Multicast listener discovery (MLD)v2 subscribers**—maximum number of MLDv2 subscribers per switch.[n] | 4120, 4220, ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420, 5520 | 10,000 |
| | ExtremeSwitching 5720-MW | 30,000 |
| | Extreme Networks 7520, 7720 | 45,000 |
| | ExtremeSwitching 5720-MXW | 54,000 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 1,000 |
| | 4120 | 256 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Multicast listener discovery (MLD)v2 maximum source per group**—maximum number of source addresses per group. | All platforms | 200 |
| **Multicast listener discovery (MLD) SSM-map entries**—maximum number of MLD SSM mapping entries. | All platforms except 4120 and 4220. | 500 |
| **Multicast listener discovery (MLD) SSM-MAP entries**—maximum number of sources per group in MLD SSM mapping entries. | All platforms except 4120 and 4220. | 50 |
| **Network Address Translation (NAT) VLANs**—maximum number of NAT VLANs. | Extreme 7520, 7720 | 4 |
| **Network Address Translation (NAT) Sessions**—number of NAT sessions supported (non twice-NAT). | Extreme 7520, 7720 | 1,023 |
| **Network Login**—maximum number of clients being authenticated on MAC-based VLAN enabled ports. | All platforms | 1,024 |
| **Network Login**—maximum number of dynamic VLANs. | All platforms | 1,024 |
| **Network Login VLAN VSAs**—maximum number of VLANs a client can be authenticated on at any given time. | All platforms | 10 |
| **Network Service Identifiers (NSI)/VLAN mappings**—maximum number of VLANs to NSI mappings. | All platforms | 94 |
| **Node Alias**—maximum number of entries per slot. | All platforms | 8,192 |
| **ONEPolicy Dynamic ACL Rules**—maximum number of Dynamic ACLs supported via RADIUS VSA 232 per user in Access-List mode. | All platforms | 64 |
| **ONEPolicy Roles/Profiles**—maximum number of policy roles/profiles. | All platforms | 63 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| ONEPolicy Rules per Role/ Profile—maximum number of rules per role/policy. | ExtremeSwitching 5320-24T-4X-XT | IPv4 Rules: 256<br>IPv6 Rules: 0<br>MAC Rules: 0<br>L2 Rules: 184 |
| | 4120 | IPv4:128 L2:56 |
| | 4220 | IPv4:256 L2:184 |
| | ExtremeSwitching 5320 | IPv4 Rules: 1,024<br>IPv6 Rules: 0<br>MAC Rules: 0<br>L2 Rules: 952 |
| | ExtremeSwitching 5420-F, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720 | IPv4 Rules: 512<br>IPv6 Rules: 512<br>MAC Rules: 512<br>L2 Rules: 440 |
| | ExtremeSwitching 5720-MW | IPv4 Rules: 1,536<br>IPv6 Rules: 1,536<br>MAC Rules: 1,536<br>L2 Rules: 1,464 |
| | ExtremeSwitching 5720-MXW | IPv4 Rules: 2,048<br>IPv6 Rules: 2,048<br>MAC Rules: 2,048<br>L2 Rules: 1 ,976 |
| | ExtremeSwitching 5420-M, 5520 | IPv4 Rules: 1,024 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| | | IPv6 Rules: 1,024<br>MAC Rules: 1,024<br>L2 Rules: 952 |
| ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per switch only with TCI-Overwrite enabled. | ExtremeSwitching 5520, 5720 | 1,024 |
| | ExtremeSwitching 5320-24T-4X-XT | 128 |
| | ExtremeSwitching 5320, 5420, Extreme Networks 7520, 7720 | 512 |
| | 4120, 4220, | 256 |
| | Stacking | Depends on the stack nodes, but the maximum is 1,024. |
| ONEPolicy Authenticated Users per Switch—maximum number of authenticated users per switch with TCI-Overwrite disabled.<br><br>**Note:** The maximum values assume 75% utilization of VLAN-XLATE hash table. | Stacking | 1,536–65,534 |
| | Extreme Networks 7520, 7720 | 24,576 |
| | ExtremeSwitching 5320-24T-4X-XT | 384 |
| | 4120, 4220, 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 per switch with TCI overwrite disabled.<br><br>**Note:** The maximum values assume 75% utilization of VLAN-XLATE hash table. | ExtremeSwitching 5320-24T-4X-XT | 384 |
| | 4120, 4220, ExtremeSwitching 5320, 5420 | 768 |
| | Extreme Networks 7520, 7720 | 24,576 |
| | ExtremeSwitching 5720 | 12,288 |
| | ExtremeSwitching 5520 | 9,216 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| ONEPolicy Authenticated Users per Port per Switch — maximum number of authenticated users per port with only with TCI-Overwrite enabled. | 4120 | 184 |
| | 4220 | 440 |
| | ExtremeSwitching 5320, 5420, Extreme Networks 7520, 7720 | 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-F, Extreme Networks 7520, 7720 | 1,976 |
| | ExtremeSwitching 5720-MW | 6,072 |
| | ExtremeSwitching 5720-MXW | 8,120 |
| | ExtremeSwitching 5420-M, 5520 | 4,024 |
| | ExtremeSwitching 5320-24T-24S-4XE-XT | 512 |
| | 4220 | 440 |
| | 4120 | 164 |
| | ExtremeSwitching 5320-24T-4X-XT | 128 |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique MAC permit/deny traffic classification rules types (macsource/macdest). | ExtremeSwitching 5420-M, 5520 | 1,024 |
| | ExtremeSwitching 5420-F, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720 | 512 |
| | ExtremeSwitching 5720-MW | 1,536 |
| | ExtremeSwitching 5720-MXW | 2,048 |
| | 4120, 4220, ExtremeSwitching 5320 | N/A |
| ONEPolicy Permit/Deny Traffic Classification Rules Types—maximum number of unique IPv6 permit/deny traffic classification rules types (ipv6dest). | ExtremeSwitching 5420-M. 5520 | 1,024 |
| | ExtremeSwitching 5420-F, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720 | 512 |
| | ExtremeSwitching 5720-MW | 1,536 |
| | ExtremeSwitching 5720-MXW | 2,048 |
| | 4120, 4220, 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 5320-24T-4X-XT | 256 |
| | ExtremeSwitching 5320, 5420-F, 5520 | 1,024 |
| | ExtremeSwitching 5720-MW | 1,536 |
| | ExtremeSwitching 5720-MXW | 2,048 |
| | ExtremeSwitching 5420-M, 5320-24T-24S-4XE-XT Extreme Networks 7520, 7720 | 512 |
| | 4220 | 256 |
| | 4120 | 128 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **ONEPolicy Permit/Deny Traffic Classification Rules Types**—maximum number of unique Layer 2 permit/deny traffic classification rules (ethertype/port). | ExtremeSwitching 5320-24T-24S-4XE-XT | 440 |
| | ExtremeSwitching 5320, 5420-M, 5520 | 952 |
| | ExtremeSwitching 5720-MW | 1,464 |
| | ExtremeSwitching 5720-MXW | 1,976 |
| | ExtremeSwitching 5420-F, Extreme Networks 7520, 7720 | 440 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 184 |
| | 4120 | 56 |
| **OnePolicy Maximum number of rules supported in AccessList mode**—maximum number of rules in AcessList mode. | Extreme Networks 7520, 7720 | 3,512 |
| | 4120 | 440 |
| | 4220, ExtremeSwitching 5320-24T-4X-XT | 952 |
| | ExtremeSwitching 5320, 5420-F, 5320-24T-24S-4XE-XT | 4,024 |
| | ExtremeSwitching 5420-M | 8,120 |
| | ExtremeSwitching 5720-MW | 12,216 |
| | ExtremeSwitching 5720-MXW | 16,312 |
| **OSPFv2/v3 ECMP**—maximum number of equal cost multipath OSPFv2 and OSPFv3. | ExtremeSwitching 5320, 5420, 5520, 5720 | 8 |
| | Extreme Networks 7520, 7720 | 64 |
| **OSPFv2 areas**—as an ABR, how many OSPF areas are supported within the same switch. | All platforms except 4120 and 4220. | 8 |
| **OSPFv2 external routes**—recommended maximum number of external routes contained in an OSPF LSDB. | ExtremeSwitching 5520 | 5,000 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 10,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420 | 4,000 |
| | ExtremeSwitching 5320-24T-4X-XT | 500 |
| **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-MXW, Extreme Networks 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420<br>ExtremeSwitching 5320-24T-4X-XT | 1,600<br>500 |
| **OSPFv2 inter-vr or leaking routes—**recommended maximum number of inter-vr routes contained in an OSPF LSDB. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT)<br>ExtremeSwitching 5320-24T-4X-XT) | 1,600<br>500 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **OSPFv2 interfaces**—recommended maximum number of OSPF interfaces on a switch (active interfaces only). | All platforms except 4120 and 4220. | 4 |
| **OSPFv2 links**—maximum number of links in the router LSA. | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 400 |
| | ExtremeSwitching 5320, 5420 | 320 |
| **OSPFv2 neighbors**—maximum number of supported OSPF adjacencies. | All platforms except 4120 and 4220. | 4 |
| **OSPFv2 routers in a single area**—recommended maximum number of routers in a single OSPF area. | ExtremeSwitching 5520 | 50 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 100 |
| | ExtremeSwitching 5320, 5420 | 40 |
| **OSPFv2 virtual links**—maximum number of supported OSPF virtual links. | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 32 |
| | ExtremeSwitching 5320, 5420 | 25 |
| **OSPFv3 areas**—as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching 5520 | 16 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 100 |
| | ExtremeSwitching 5320, 5420 | 12 |
| **OSPFv3 external routes**—recommended maximum number of external routes. | ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720 | 10,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720-MW<br>ExtremeSwitching 5420<br>ExtremeSwitching 5320-24T-4X-XT | 7,500<br>6,000<br>300 |
| **OSPFv3 inter- or intra-area routes**—recommended maximum number of inter- or intra-area routes. | ExtremeSwitching 5520 | 3,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720, Extreme Networks 7520, 7720 | 4,000 |
| | ExtremeSwitching 5420<br>ExtremeSwitching 5320-24T-4X-XT | 6,000<br>300 |
| **OSPFv3 interfaces**—maximum number of OSPFv3 interfaces (active interfaces only). | All platforms except 4120 and 4220. | 4 |
| **OSPFv3 neighbors**—maximum number of OSPFv3 neighbors. | All platforms except 4120 and 4220. | 4 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **OSPFv3 virtual links**—maximum number of OSPFv3 virtual links supported. | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320, 5420 | 16<br>12 |
| **PIM IPv4 (maximum interfaces)**—maximum number of PIM active interfaces. | All platforms except 4120 and 4220. | N/A |
| **PIM IPv4 Limits**—maximum number of multicast groups per dynamic rendezvous point. | All platforms except 4120 and 4220. | 180 |
| **PIM IPv4 Limits**—maximum number of multicast groups per static rendezvous point. | All platforms except 4120 and 4220. | 180 |
| **PIM IPv4 Limits**—maximum number of multicast sources per group. | All platforms except 4120, 4220, ExtremeSwitching 5320 24T XT, 5520, 5720-MXW, Extreme Networks 7520, and 7720.<br>ExtremeSwitching 5320 24T XT | 5,000<br>2,000 |
| **PIM IPv4 Limits**—maximum number of dynamic rendezvous points per multicast group. | All platforms except 4120 and 4220. | 145 |
| **PIM IPv4 Limits**—static rendezvous points. | All platforms except 4120 and 4220. | 32 |
| **PIM IPv6 (maximum interfaces)**—maximum number of PIM active interfaces. | All platforms except 4120 and 4220. | N/A |
| **PIM IPv6 Limits**—maximum number of multicast sources per group. | All platforms except 4120, 4220 ExtremeSwitching 5320 24T XT, 5520, 5720-MXW, Extreme Networks 7520, and 7720.<br>ExtremeSwitching 5320 24T XT | 1,750<br>1,000 |
| **PIM IPv6 Limits**—maximum number of multicast groups per dynamic rendezvous point. | All platforms except 4120 and 4220. | 70 |
| **PIM IPv6 Limits**—maximum number of multicast groups per static rendezvous point. | All platforms except 4120 and 4220. | 3,000 (depends on policy file limits) |
| **PIM IPv6 Limits**—maximum number of dynamic rendezvous points per multicast group. | All platforms except 4120 and 4220. | 64 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **PIM IPv6 Limits**—maximum number of secondary addresses per interface. | All platforms except 4120 and 4220. | 70 |
| **PIM IPv6 Limits**—static rendezvous points. | All platforms except 4120 and 4220. | 32 |
| **Policy-based routing (PBR) redundancy**—maximum number of flow-redirects. | All platforms | 256 [o] |
| **Policy-based routing (PBR) redundancy**—maximum number of next hops per each flow-direct. | All platforms | 32 [o] |
| **Port-specific VLAN tags**—maximum number of port-specific VLAN tags. | ExtremeSwitching 5320, 5420<br>ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | N/A<br>1,023 |
| **Port-specific VLAN tags**—maximum number of port-specific VLAN tag ports. | ExtremeSwitching 5320, 5420<br>ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | N/A<br>4,000 |
| **Private VLANs**—maximum number of subscribers. Assumes a minimum of one port per network and subscriber VLAN. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720<br>Extreme Networks 7520, 7720 | 36<br>71 |
| **Private VLANs**—maximum number of private VLANs with an IP address on the network VLAN.<br><br>**Note:** This limit is dependent on the maximum number of private VLANs in an L2-only environment if the configuration has tagged and translated ports. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720<br>Extreme Networks 7520, 7720 | 960<br>1,024 |
| **Private VLANs**—maximum number of private VLANs in an L2-only environment. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720<br>Extreme Networks 7520, 7720 | 960<br>1,280 |
| **Route policies**—suggested maximum number of lines in a route policy file. | All platforms | 10,000 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **RIP Learned Routes**—maximum number of RIP routes supported without aggregation. | ExrtemeSwitching 5320 48T/P, 5320 24T-24S XT, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 10,000 |
| | ExrtemeSwitching 5320 16P, 5320 24T/P | 7000 |
| | ExrtemeSwitching 5320-24T-4X-XT | 900 |
| **RIP interfaces on a single router**—recommended maximum number of RIP routed interfaces on a switch. | ExtremeSwitching 5320, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 256 |
| **RIPng learned routes**—maximum number of RIPng routes. | ExrtemeSwitching 5320 48T/P, 5320 24T-24S XT, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 3,000 |
| | ExrtemeSwitching 5320 16P, 5320 24T/P | 2,000 |
| | ExrtemeSwitching 5320-24T-4X-XT | 400 |
| **Spanning Tree (maximum STPDs)**—maximum number of Spanning Tree Domains on port mode EMISTP. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, 5320-24T-24S-4XE-XT, Extreme Networks 7520, 7720 | 64 |
| | 4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT | 32 |
| **Spanning Tree PVST+**—maximum number of port mode PVST domains.<br><br>**Note:** For all platforms, the maximum number of active ports per PVST domain depends on the maximum number of spanning tree ports supported on given platform. For example, on a 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 ÷ 256). | 4120, 4220, ExtremeSwitching 5320, 5320-24T-4X-XT, 5320-24T-24S-4XE-XT, 5420, 5520, 5720 | 128 |
| | Extreme Networks 7520, 7720 | 384 |
| **Spanning Tree**—maximum number of multiple spanning tree instances (MSTI) domains. | ExtremeSwitching 5320-48T/P, 5320-24T-24S-4XE-XT, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 64 |
| | 4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT | 32 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Spanning Tree**—maximum number of VLANs per MSTI.<br><br>**Note:** Maximum number of 10 active ports per VLAN when all 500 VLANs are in one MSTI. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720<br><br>4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P; 5320-24T-4X-XT, 5320-24T-24S-4XE-XT | 600<br><br>256 |
| **Spanning Tree**—maximum number of VLANs on all MSTP instances. | ExtremeSwitching 5320-48T/P, 5320-24T-24S-4XE-XT, 5420, 5520, 5720, Extreme Networks 7520, 7720<br><br>4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT | 1,024<br><br>512 |
| **Spanning Tree (802.1d domains)**—maximum number of 802.1d domains per port. | All platforms | 1 |
| **Spanning Tree (number of ports)**—maximum number of ports including all Spanning Tree domains. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720<br><br>4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P | 4,096<br><br>2,048 |
| **Spanning Tree (maximum VLANs)**—maximum number of STP-protected VLANs (dot1d and dot1w). | ExtremeSwitching 5320-48T/P, 5320-24T-24S-4XE-XT, 5420, 5520, 5720, Extreme Networks 7520, 7720<br><br>4120, 4220, ExtremeSwitching 5320-24T/P, 5320-16P, 5320-24T-4X-XT | 1,024<br><br>600 |
| **SSH (number of sessions)**—maximum number of simultaneous SSH sessions. | All platforms | 8 |
| **Static MAC multicast FDB entries**—maximum number of permanent multicast MAC entries configured into the FDB. | All platforms | 1,024 |
| **Syslog servers**—maximum number of simultaneous Syslog servers that are supported. | All platforms | 16 |
| **Syslog targets**—maximum number of configurable Syslog targets. | All platforms | 16 |
| **Telnet (number of sessions)**—maximum number of simultaneous Telnet sessions. | All platforms | 8 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Virtual routers**—maximum number of user-created virtual routers that can be created on a switch. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 63 |
| | 4120, 4220, 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.<br><br>**Note:** * Subject to other system limitations. | ExtremeSwitching 5320-48T/P, 5420, 5520, 5720, Extreme Networks 7520, 7720 | 960 * |
| | 4120, 4220, 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, Extreme Networks 7520, 7720 | 8 |
| | 4120, 4220, 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, Extreme Networks 7520, 7720 | 64 |
| | 4120, 4220, 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. | All platforms | 1,000 |
| **VLANs**—includes all VLANs.<br><br>**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.) | All platforms | 4,094 |
| **VLANs (Layer 2)**—maximum number of Layer 2 VLANs. | All platforms | 4,094 |
| **VLANs (Layer 3)**—maximum number of VLANs performing IPv4 and/or IPv6 routing. Excludes sub-VLANs. | ExtremeSwitching 5320-48T/P, 5420 | 1,533 |
| | 4120 | 126 |
| | 4220, ExtremeSwitching 5320-24T/P, 5320-16P | 509 |
| | ExtremeSwitching 5520, 5720, Extreme 7520, 7720 | 2,048 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **VLAN Port Interfaces (VPIF)**—maximum number of VLAN port interfaces. | ExtremeSwitching 5320 | 40,000 |
| | ExtremeSwitching 5420 | 60,000 |
| | 4120, 4220 | 65,549 |
| | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 131,585 |
| **VLANs (maximum active port-based)**—maximum active ports per VLAN when 4,094 VLANs are configured with the default license. | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 32 |
| | 4120, 4220 | 15 |
| | ExtremeSwitching 5320, 5420 | 3 |
| **VLANs (maximum active protocol-sensitive filters)**—number of simultaneously active protocol filters in the switch. | All platforms except 4120 and 4220. | 16 |
| **VLAN translation**—maximum number of translation VLANs. Assumes a minimum of one port per translation and member VLAN. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720 | 36 |
| | Extreme Networks 7520, 7720 | 71 |
| **VLAN translation**—maximum number of translation VLAN pairs with an IP address on the translation VLAN.<br><br>**Note:** This limit is dependent on the maximum number of translation VLAN pairs in an L2-only environment if the configuration includes tagged and translated ports. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720 | 960 |
| | Extreme Networks 7520, 7720 | 1,024 |
| **VLAN translation**—maximum number of translation VLAN pairs in an L2-only environment. | 4120, 4220, ExtremeSwitching 5320, 5420, 5520, 5720 | 960 |
| | Extreme Networks 7520, 7720 | 2,046 |
| **VMAN CEP**—maximum number of CVIDs.<br><br>**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. | **Normal Mode (as individual VRs):** | |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **Note:** These limits are applicable for Fabric Routing configuration also.<br><br>**Note:** Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type. | All platforms except 4120 and 4220. | 511 |
| | **Scaled Mode (with groups):** | |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 2,048 |
| | ExtremeSwitching 5320, 5420, 5520 | 1,000 |
| | **Sliced Mode:** | |
| | All platforms except 4120 and 4220. | 511 |
| **VRRP (v3-IPv6) (maximum instances)**—maximum number of VRRP instances for a single switch. (VRRP-VRRPv3-IPv6)<br><br>**Note:** These limits are applicable for Fabric Routing configuration also.<br><br>**Note:** Number of groups configured should not exceed the number of individual VRs supported (that is, in normal mode) for that platform type. | **Normal Mode (as individual VRs):** | |
| | All platforms except 4120 and 4220. | 511 |
| | **Scaled Mode (with groups):** | |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 2,048 |
| | ExtremeSwitching 5320, 5420, 5520 | 1,000 |
| **VRRP (v2/v3-IPv4/IPv6) (maximum VRID)**—maximum number of unique VRID numbers per switch. | All platforms except 4120 and 4220. | 255 |
| **VRRP (v2/v3-IPv4/IPv6) (maximum VRIDs per VLAN)**—maximum number of VRIDs per VLAN. | All platforms except 4120 and 4220. | 255 |
| **VRRP (v2/v3-IPv4/IPv6) (maximum ping tracks)**—maximum number of ping tracks per VLAN. | All platforms except 4120 and 4220. | 8 |
| **VRRP (maximum ping tracks)**—maximum number of ping tracks per VRRP Instance under 128 VRRP instances. | All platforms except 4120 and 4220. | 8 (20 centisecond or 1 second hello interval) |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **VRRP (v3-IPv6) (maximum ping tracks)**—maximum number of ping tracks per VRRP Instance under 128 VRRP instances. | All platforms except 4120 and 4220. | 8 (20 centisecond or 1 second hello interval) |
| **VRRP (v2/v3-IPv4/IPv6) (maximum iproute tracks)**—maximum number of IP route tracks per VLAN. | All platforms except 4120 and 4220. | 8 |
| **VRRP (v2/v3-IPv4/IPv6)**—maximum number of VLAN tracks per VLAN. | All platforms except 4120 and 4220. | 8 |
| **VXLAN**—maximum virtual networks.<br><br>**Note:** Every VPLS instance/ PSTag VLAN reduces this limit by 1.<br><br>**Note:** Assumption is all BUM (broadcast/unknown-unicast/multicast) FDB entries are pointing to the same set of RTEPs when all VNETs use explicit flooding. Depends on whether all VNETs use standard or explicit and the number of tenant VLAN ports.<br><br>**Note:** On ExtremeSwitching 5520 and 5420 switches, every VNET reduces this limit by 1.<br>Every (VPLS/PSTag VLAN) + port reduces the limit by 1 on all platforms.<br>Every VXLAN Underlay Multicast Tunnel reduces this limit by 1. | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720<br><br>4220, ExtremeSwitching 5320, 5420 | 2,048–4,000<br><br>150-375 |
| **VXLAN**—maximum tenant VLANs plus port combinations<br><br>**Note:** Every (VPLS/PSTag VLAN) + port reduces the limit by 1. | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720<br><br>4220, ExtremeSwitching 5320, 5420 | 4,096<br><br>150-375 |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| VXLAN—maximum static MAC to IP bindings.<br><br>Note: Every FDB entry configured reduces this limit by 1. | All supported platforms | 64,000 |
| VXLAN—maximum RTEP IP addresses | All platforms | 512 |
| VXLAN—maximum virtual networks with dynamic learning and OSPF extensions for VXLAN | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720<br><br>4220, ExtremeSwitching 5320, 5420 | 4,000<br><br>375 |
| VXLAN—or replicator role, maximum number of attached leafs per switch. | All platforms | 256 |
| XML requests—maximum number of XML requests per second.<br><br>Note: Limits are dependent on load and type of XML request. These values are dynamic ACL data requests. | All platforms | 10 with 100 DACLs |
| XNV authentication—maximum number of VMs that can be processed (combination of local and network VMs). | All platforms except 4120 and 4220. | 2,048 |
| XNV database entries—maximum number of VM database entries (combination of local and network VMs). | All platforms except 4120 and 4220. | 16,000 |
| XNV database entries—maximum number of VPP database entries (combination of local and network VPPs). | All platforms except 4120 and 4220. | 2,048 |
| XNV dynamic VLAN—Maximum number of dynamic VLANs created (from VPPs /local VMs). | All platforms except 4120 and 4220. | 2,048 |
| XNV local VPPs—maximum number of XNV local VPPs. | All platforms except 4120 and 4220. | 2,048 ingress<br>512 egress |

**Table 6: Supported Limits for the Base License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **XNV policies/dynamic ACLs**—maximum number of policies/dynamic ACLs that can be configured per VPP. | All platforms except 4120 and 4220. | 8 ingress<br>4 egress |
| **XNV network VPPs**—maximum number of XNV network VPPs.[p] | All platforms except 4120 and 4220. | 2,048 ingress<br>512 egress |

## Premier License Limits

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

**Table 7: Supported Limits for the Premier License**

| Metric | Product | Limit |
|---|---|---|
| **Anycast RP Using PIM**—maximum number of IPv4 Anycast RP set per VR. | All platforms | 32 |
| **Anycast RP Using PIM**—maximum number of IPv6 Anycast RP set per VR. | All platforms | 32 |
| **Anycast RP Using PIM**—RP peers per Anycast RP set. | All platforms | 10 |
| **BGP (aggregates)**—maximum number of BGP aggregates. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320 | 256<br>204 |
| **BGP (networks)**—maximum number of BGP networks. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320 | 1,024<br>820 |
| **BGP (peers)**—maximum number of BGP peers.<br>**Note:** With default keepalive and hold timers.<br>**Note:** Each BGPv4/BGPv6 peer handles a maximum of 50 routes.<br>**Note:** ECMP should not be enabled for BGP. | ExtremeSwitching 5420, 5520<br>ExtremeSwitching 5720, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320 | 128<br>300<br>100 |
| **BGP (peer groups)**—maximum number of BGP peer groups. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320 | 64<br>50 |

**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **BGP (policy entries)**—maximum number of BGP policy entries per route policy. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 256 |
| | ExtremeSwitching 5320 | 204 |
| **BGP (policy statements)**—maximum number of BGP policy statements per route policy. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 1,024 |
| | ExtremeSwitching 5320 | 820 |
| **BGP multicast address-family routes**—maximum number of multicast address-family routes. | ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720 | 25,000 |
| | ExtremeSwitching 5320, 5420, 5720-MW | 20,000 |
| **BGP (unicast address-family routes)**—maximum number of unicast address-family routes. | ExtremeSwitching 5420, 5520, 5720-MXW, Extreme Networks 7520, 7720 (at default) | 25,000 |
| | ExtremeSwitching 5320, 5720-MW | 20,000 |
| | ExtremeSwitching 5720-MW (with ALPM enabled) | 163,000 |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 288,000 |
| | ExtremeSwitching 5520 (with ALPM enabled) | 80,000 |
| **BGP (non-unique routes)**—maximum number of non-unique BGP routes. | ExtremeSwitching 5420, 5520, 5720-MXW, Extreme Networks 7520, 7720 | 75,000 |
| | ExtremeSwitching 5320, 5720-MW | 60,000 |
| **BGP ECMP**—maximum number of equal cost paths per multipath for BGP and BGPv6. | ExtremeSwitching 5320, 5420, 5520, Extreme Networks 7520, 7720 | 8 |
| | ExtremeSwitching 5720 | 64 |
| **BGPv6 (unicast address-family routes)**—maximum number of unicast address family routes. | ExtremeSwitching 5420, 5520, 5720-MW | 6,000 |
| | ExtremeSwitching 5720-MW (with ALPM enabled) | 107,000 |
| | ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720 | 10,000 |
| | ExtremeSwitching 5720-MXW (with ALPM enabled) | 213,000 |
| | ExtremeSwitching 5320 | 4,800 |
| | ExtremeSwitching 5520 (with ALPM enabled) | 40,000 |

**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **BGPv6 (non-unique routes)**—maximum number of non-unique BGP routes. | ExtremeSwitching 5420, 5520, 5720-MW | 18,000 |
| | ExtremeSwitching 5720-MXW, Extreme Networks 7520, 7720 | 30,000 |
| | ExtremeSwitching 5320 | 14,000 |
| **EVPN EVI instances**—maximum number of EVI instances. | All platforms | 1,024 |
| **GRE Tunnels**—maximum number of GRE tunnels. | All platforms | 255 |
| **IS-IS adjacencies**—maximum number of supported IS-IS adjacencies. | All platforms | 128 |
| **IS-IS ECMP**—maximum number of equal cost paths per multipath for IS-IS. | All platforms | 2, 4, or 8 |
| **IS-IS interfaces**—maximum number of interfaces that can support IS-IS. | All platforms | 255 |
| **IS-IS routers in an area**—recommended maximum number of IS-IS routers in an area. | All platforms | 256 |
| **IS-IS route origination**—recommended maximum number of routes that can be originated by an IS-IS node. | All platforms | 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. | All platforms | 25,000 |
| **IS-IS IPv4 L2 routes**—recommended maximum number of IS-IS Level 2 routes. | All platforms | 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. | All platforms | 20,000 |
| **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. | All platforms | 10,000 |

**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **IS-IS IPv6 L2 routes**—recommended maximum number of IS-IS Level 2 routes. | All platforms | 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. | All platforms | 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. | All platforms | 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. | All platforms | 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. | All platforms | 20,000 |
| **L2 VPN: VCCV (pseudowire Virtual Circuit Connectivity Verification) VPNs per switch**—maximum number of VCCV enabled VPLS VPNs. | ExtremeSwitching 5520, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320, 5420, 5720 | 16<br>N/A |
| **L2 VPN: VPLS MAC addresses**—maximum number of MAC addresses learned by a switch. | ExtremeSwitching 5520<br>Extreme Networks 7520, 7720<br>Extreme Networks 5320, 5420, 5720 | 64,000<br>140,000<br>N/A |
| **L2 VPN: VPLS VPNs**—maximum number of VPLS virtual private networks per switch. | ExtremeSwitching 5520, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320, 5420, 5720 | 1,023<br>N/A |
| **L2 VPN: VPLS peers**—maximum number of VPLS peers per VPLS instance. | ExtremeSwitching 5520, Extreme Networks 7520, 7720<br>ExtremeSwitching 5320, 5420, 5720 | 64<br>N/A |

**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| L2 VPN: LDP pseudowires—maximum number of pseudowires per switch. | ExtremeSwitching 5520 | 4,000 |
| | Extreme Networks 7520, 7720 | 7,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| L2 VPN: static pseudowires—maximum number of static pseudowires per switch. | ExtremeSwitching 5520 | 4,000 |
| | Extreme Networks 7520, 7720 | 7,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| L2 VPN: Virtual Private Wire Service (VPWS) VPNs—maximum number of virtual private networks per switch. | ExtremeSwitching 5520 | 1,023 |
| | Extreme Networks 7520, 7720 | 4,090 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE interfaces—maximum number of interfaces. | ExtremeSwitching 5520, Extreme 7520, 7720 | 32 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE ingress LSPs—maximum number of ingress LSPs. | ExtremeSwitching 5520, Extreme 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE egress LSPs—maximum number of egress LSPs. | ExtremeSwitching 5520, Extreme 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE transit LSPs—maximum number of transit LSPs. | ExtremeSwitching 5520, Extreme 7520, 7720 | 4,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE paths—maximum number of paths. | ExtremeSwitching 5520 | 1,000 |
| | Extreme 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE profiles—maximum number of profiles. | ExtremeSwitching 5520 | 1,000 |
| | Extreme 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS RSVP-TE EROs—maximum number of EROs per path. | ExtremeSwitching 5520, Extreme 7520, 7720 | 64 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS LDP peers—maximum number of MPLS LDP peers per switch. | ExtremeSwitching 5520, Extreme 7520, 7720 | 128 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| MPLS LDP adjacencies—maximum number of MPLS LDP adjacencies per switch. | ExtremeSwitching 5520, Extreme 7520, 7720 | 64 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |

**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **MPLS LDP ingress LSPs**—maximum number of MPLS LSPs that can originate from a switch. | ExtremeSwitching 5520, Extreme 7520, 7720 | 2,048 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MPLS LDP-enabled interfaces**—maximum number of MPLS LDP configured interfaces per switch. | ExtremeSwitching 5520, Extreme 7520, 7720 | 128 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MPLS LDP transit LSPs**—maximum number of MPLS transit LSPs per switch. | ExtremeSwitching 5520, Extreme 7520, 7720 | 4,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MPLS LDP egress LSPs**—maximum number of MPLS egress LSPs that can terminate on a switch. | ExtremeSwitching 5520, Extreme 7520, 7720 | 4,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MPLS static egress LSPs**—maximum number of static egress LSPs. | ExtremeSwitching 5520 | 4,000 |
| | Extreme 7520, 7720 | 8,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MPLS static ingress LSPs**—maximum number of static ingress LSPs. | ExtremeSwitching 5520, Extreme 7520, 7720 | 4,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MPLS static transit LSPs**—maximum number of static transit LSPs | ExtremeSwitching 5520, Extreme 7520, 7720 | 4,000 |
| | ExtremeSwitching 5320, 5420, 5720 | N/A |
| **MSDP active peers**—maximum number of active MSDP peers. | All platforms | 64 |
| **MSDP SA cache entries**—maximum number of entries in SA cache. | ExtremeSwitching 5320, 5420F | 6,000 |
| | ExtremeSwitching 5420M | 8,000 |
| | ExtremeSwitching 5520, 5720, Extreme Networks 7520, 7720 | 14,000 |
| **MSDP maximum mesh groups**—maximum number of MSDP mesh groups. | All platforms | 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. | All platforms | 8 |

**Table 7: 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, Extreme Networks 7520, 7720 | 10,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420<br>ExtremeSwitching 5320-24T-4X-XT | 4,000<br>400 |
| **OSPFv2 inter- or intra-area routes—**recommended maximum number of inter- or intra-area routes contained in an OSPF LSDB with one ABR in OSPF domain. | ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5420<br>ExtremeSwitching 5320-24T-4X-XT | 1,600<br>500 |
| **OSPFv2 inter-vr or leaking routes—**recommended maximum number of inter-vr routes contained in an OSPF LSDB. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 2,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT)<br>ExtremeSwitching 5320-24T-4X-XT) | 1,600<br>500 |
| **OSPFv2 interfaces**—recommended maximum number of OSPF interfaces on a switch (active interfaces only). | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 400 |
| | ExtremeSwitching 5320 | 320 |
| **OSPFv2 links**—maximum number of links in the router LSA. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 400 |
| | ExtremeSwitching 5320 | 320 |
| **OSPFv2 neighbors**—maximum number of supported OSPF adjacencies. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 128 |
| | ExtremeSwitching 5320 | 96 |
| **OSPFv2 routers in a single area**—recommended maximum number of routers in a single OSPF area. | ExtremeSwitching 5420, 5520 | 50 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 100 |
| | ExtremeSwitching 5320 | 40 |
| **OSPFv2 virtual links**—maximum number of supported OSPF virtual links. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 32 |
| | ExtremeSwitching 5320 | 25 |
| **OSPFv3 areas**—as an ABR, the maximum number of supported OSPFv3 areas. | ExtremeSwitching 5420, 5520 | 16 |
| | ExtremeSwitching 5720, Extreme Networks 7520, 7720 | 100 |
| | ExtremeSwitching 5320 | 12 |

**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **OSPFv3 external routes**—recommended maximum number of external routes. | ExtremeSwitching 5520, 5720-MXW, Extreme Networks 7520, 7720 | 10,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720-MW | 7,500 |
| | ExtremeSwitching 5420<br>ExtremeSwitching 5320-24T-4X-XT | 6,000<br>300 |
| **OSPFv3 inter- or intra-area routes**—recommended maximum number of inter- or intra-area routes. | ExtremeSwitching 5520 | 3,000 |
| | ExtremeSwitching 5320 (except 5320-24T-4X-XT), 5720, Extreme Networks 7520, 7720 | 4,000 |
| | ExtremeSwitching 5420<br>ExtremeSwitching 5320-24T-4X-XT | 6,000<br>300 |
| **OSPFv3 interfaces**—maximum number of OSPFv3 interfaces (active interfaces only). | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 256 |
| | ExtremeSwitching 5320 | 192 |
| **OSPFv3 neighbors**—maximum number of OSPFv3 neighbors. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 64 |
| | ExtremeSwitching 5320 | 48 |
| **OSPFv3 virtual links**—maximum number of OSPFv3 virtual links supported. | ExtremeSwitching 5420, 5520, 5720, Extreme Networks 7520, 7720 | 16 |
| | ExtremeSwitching 5320 | 12 |
| **PIM IPv4 (maximum interfaces)**—maximum number of PIM active interfaces. | All platforms | 255 |
| **PIM IPv4 Limits**—maximum number of multicast groups per dynamic rendezvous point. | All platforms | 180 |
| **PIM IPv4 Limits**—maximum number of multicast groups per static rendezvous point. | All platforms | 3,000 (depends on policy file limits) |
| **PIM IPv4 Limits**—maximum number of multicast sources per group. | All platforms | 5,000 |
| **PIM IPv4 Limits**—maximum number of dynamic rendezvous points per multicast group. | All platforms | 145 |
| **PIM IPv4 Limits**—static rendezvous points. | All platforms | 32 |

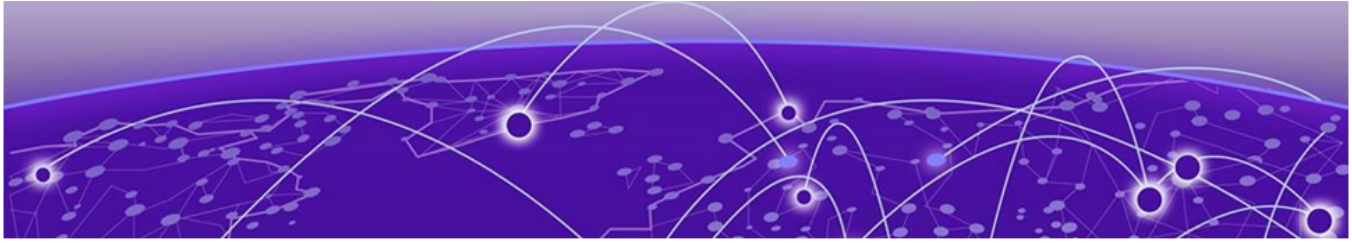
**Table 7: Supported Limits for the Premier License (continued)**

| Metric | Product | Limit |
|---|---|---|
| **PIM IPv6 (maximum interfaces)**—maximum number of PIM active interfaces. | All platforms | 255 |
| **PIM IPv6 Limits**—maximum number of multicast sources per group. | All platforms | 1,750 |
| **PIM IPv6 Limits**—maximum number of multicast groups per dynamic rendezvous point. | All platforms | 70 |
| **PIM IPv6 Limits**—maximum number of multicast groups per static rendezvous point. | All platforms | 3,000 (depends on policy file limits) |
| **PIM IPv6 Limits**—maximum number of dynamic rendezvous points per multicast group. | All platforms | 64 |
| **PIM IPv6 Limits**—maximum number of secondary addresses per interface. | All platforms | 70 |
| **PIM IPv6 Limits**—static rendezvous points. | All platforms | 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



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

## Open Issues

There are no open issues in this version.

## Known Behaviors

The following are limitations in the Switch Engine architecture that have yet to be resolved.

- AVB is not supported on 7520 Series and 7720 Series.
- ExtremeCloud IQ and ExtremeCloud IQ Site Engine are not supported in this release.

## Resolved Issues in Switch Engine 33.1.100

There are no resolved issues in this version.