

# **AOS-CX 10.10 Diagnostics and Supportability Guide**

**83xx, 9300, 10000 Switch Series**



**Hewlett Packard  
Enterprise**

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<b>About this document</b> .....	<b>8</b>
Applicable products .....	8
Latest version available online .....	8
Command syntax notation conventions .....	8
About the examples .....	9
Identifying switch ports and interfaces .....	9
<b>Debug logging</b> .....	<b>11</b>
Debug logging commands .....	11
clear debug buffer .....	11
debug {all   <MODULE-NAME>} .....	12
debug db .....	13
debug destination .....	16
show debug .....	17
show debug buffer .....	18
show debug destination .....	19
<b>Log Rotation</b> .....	<b>20</b>
Log file paths .....	20
About rotated log files .....	20
Log rotation troubleshooting .....	20
Log files not transferred remotely .....	20
Log rotation not occurring immediately after max file size .....	21
Log rotation not occurring regardless of period .....	21
Log rotation commands .....	21
logging threshold .....	21
logrotate maxsize .....	23
logrotate period .....	24
logrotate target .....	24
show logrotate .....	26
<b>Switch system and hardware commands</b> .....	<b>28</b>
<b>Reboot reasons</b> .....	<b>29</b>
<b>Event Logs</b> .....	<b>31</b>
Showing and clearing events .....	31
<b>Network Configuration Validator</b> .....	<b>32</b>
Showing and clearing events .....	32
Network configuration validation commands .....	32
switch config-validator .....	32
<b>Supportability Copy</b> .....	<b>34</b>
Supportability copy commands .....	34
copy checkpoint .....	34
copy command-output .....	35
copy core-dump daemon .....	36

copy core-dump kernel .....	37
copy core-dump kernel <STORAGE-URL> .....	38
copy diag-dump feature <FEATURE> .....	39
copy diag-dump local-file .....	40
copy <IMAGE> .....	41
copy running-config .....	42
copy show-tech feature .....	43
copy show-tech local-file .....	44
copy startup-config .....	46
copy support-files .....	47
copy support-files local-file .....	48
copy support-log .....	49
<b>Traceroute .....</b>	<b>52</b>
Traceroute commands .....	52
traceroute .....	52
traceroute6 .....	55
<b>Ping .....</b>	<b>57</b>
Ping commands .....	57
ping .....	57
ping6 .....	63
Troubleshooting .....	66
Operation not permitted .....	66
Network is unreachable .....	67
Destination host unreachable .....	67
<b>Remote syslog .....</b>	<b>68</b>
Remote syslog commands .....	68
logging .....	68
logging filter .....	70
logging facility .....	73
logging persistent-storage .....	74
<b>Service OS .....</b>	<b>76</b>
Service OS CLI login .....	76
Service OS user accounts .....	77
Service OS boot menu .....	77
Console configuration .....	78
AOS-CX boot .....	78
File system access .....	79
Service OS mount failure .....	80
Service OS CLI command list .....	80
Service OS CLI features and limitations .....	81
Service OS CLI commands .....	81
boot .....	81
cat .....	82
cd path .....	83
config-clear .....	83
cp .....	84
du .....	85
erase zeroize .....	86
exit .....	87
format .....	88
identify .....	89
ip .....	90

ls .....	91
md5sum .....	93
mkdir .....	93
mount .....	94
mv .....	95
password (svos) .....	95
ping .....	96
pwd .....	97
reboot .....	97
rm .....	98
rmdir .....	99
secure-mode .....	99
sh .....	101
umount .....	101
update .....	102
tftp .....	103
version .....	104
<b>In-System Programming .....</b>	<b>106</b>
Show tech command list for the ISP feature .....	106
In-System Programming commands .....	106
clear update-log .....	106
show needed-updates .....	106
<b>Selftest .....</b>	<b>108</b>
Selftest commands .....	108
fastboot .....	108
show selftest .....	110
<b>Zeroization .....</b>	<b>113</b>
Zeroization commands .....	113
erase all zeroize .....	113
<b>Terminal Monitor .....</b>	<b>115</b>
Terminal monitor commands .....	115
logging console {notify   severity   filter} .....	115
show terminal-monitor .....	116
terminal-monitor {notify   severity   filter} .....	117
<b>Troubleshooting Web UI and REST API Access Issues .....</b>	<b>119</b>
HTTP 404 error when accessing the switch URL .....	119
HTTP 401 error "Login failed: session limit reached" .....	119
<b>Support and Other Resources .....</b>	<b>121</b>
Accessing HPE Aruba Networking Support .....	121
Accessing Updates .....	122
Aruba Support Portal .....	122
My Networking .....	122
Warranty Information .....	122
Regulatory Information .....	123
Documentation Feedback .....	123

This document describes features of the AOS-CX network operating system. It is intended for administrators responsible for installing, configuring, and managing Aruba switches on a network.

## Applicable products

This document applies to the following products:

- Aruba 8320 Switch Series (JL479A, JL579A, JL581A)
- Aruba 8325 Switch Series (JL624A, JL625A, JL626A, JL627A)
- Aruba 8360 Switch Series (JL700A, JL701A, JL702A, JL703A, JL706A, JL707A, JL708A, JL709A, JL710A, JL711A, JL700C, JL701C, JL702C, JL703C, JL706C, JL707C, JL708C, JL709C, JL710C, JL711C, JL704C, JL705C, JL719C, JL718C, JL717C, JL720C, JL722C, JL721C )
- Aruba 9300 Switch Series (R9A29A, R9A30A, R8Z96A)
- Aruba 10000 Switch Series (R8P13A, R8P14A)

## Latest version available online

Updates to this document can occur after initial publication. For the latest versions of product documentation, see the links provided in [Support and Other Resources](#).

## Command syntax notation conventions

Convention	Usage
<code>example-text</code>	Identifies commands and their options and operands, code examples, filenames, pathnames, and output displayed in a command window. Items that appear like the example text in the previous column are to be entered exactly as shown and are required unless enclosed in brackets ( [ ] ).
<b>example-text</b>	In code and screen examples, indicates text entered by a user.
Any of the following: <ul style="list-style-type: none"><li>▪ <code>&lt;example-text&gt;</code></li><li>▪ <code>&lt;example-text&gt;</code></li><li>▪ <i>example-text</i></li><li>▪ <i>example-text</i></li></ul>	Identifies a placeholder—such as a parameter or a variable—that you must substitute with an actual value in a command or in code: <ul style="list-style-type: none"><li>▪ For output formats where italic text cannot be displayed, variables are enclosed in angle brackets (&lt; &gt;). Substitute the text—including the enclosing angle brackets—with an actual value.</li><li>▪ For output formats where italic text can be displayed, variables might or might not be enclosed in angle brackets. Substitute the text including the enclosing angle brackets, if any, with an actual value.</li></ul>



Convention	Usage
	Vertical bar. A logical OR that separates multiple items from which you can choose only one. Any spaces that are on either side of the vertical bar are included for readability and are not a required part of the command syntax.
{ }	Braces. Indicates that at least one of the enclosed items is required.
[ ]	Brackets. Indicates that the enclosed item or items are optional.
... or ...	Ellipsis: <ul style="list-style-type: none"> <li>■ In code and screen examples, a vertical or horizontal ellipsis indicates an omission of information.</li> <li>■ In syntax using brackets and braces, an ellipsis indicates items that can be repeated. When an item followed by ellipses is enclosed in brackets, zero or more items can be specified.</li> </ul>

## About the examples

Examples in this document are representative and might not match your particular switch or environment.

The slot and port numbers in this document are for illustration only and might be unavailable on your switch.

### Understanding the CLI prompts

When illustrating the prompts in the command line interface (CLI), this document uses the generic term `switch`, instead of the host name of the switch. For example:

```
switch>
```

The CLI prompt indicates the current command context. For example:

```
switch>
```

Indicates the operator command context.

```
switch#
```

Indicates the manager command context.

```
switch(CONTEXT-NAME)#
```

Indicates the configuration context for a feature. For example:

```
switch(config-if)#
```

Identifies the `interface` context.

### Variable information in CLI prompts

In certain configuration contexts, the prompt may include variable information. For example, when in the VLAN configuration context, a VLAN number appears in the prompt:

```
switch(config-vlan-100)#
```

When referring to this context, this document uses the syntax:

```
switch(config-vlan-<VLAN-ID>#
```

Where `<VLAN-ID>` is a variable representing the VLAN number.

## Identifying switch ports and interfaces

Physical ports on the switch and their corresponding logical software interfaces are identified using the format:

*member/slot/port*

### **On the 83xx, 9300, and 10000 Switch Series**

- *member*: Always 1. VSF is not supported on this switch.
- *slot*: Always 1. This is not a modular switch, so there are no slots.
- *port*: Physical number of a port on the switch.

For example, the logical interface 1/1/4 in software is associated with physical port 4 on the switch.



---

If using breakout cables, the port designation changes to x:y, where x is the physical port and y is the lane when split to 4 x 10G or 4 x 25G. For example, the logical interface 1/1/4:2 in software is associated with lane 2 on physical port 4 in slot 1 on member 1.

---

The debug logging framework provides an improved, customizable, and conditional logging framework with feature and entity based filtering options. Debug logging is a verbose, on-demand logging mechanism which customers and support can enable in order to obtain more information that will assist with troubleshooting.

Each debug logging event has both a Severity and a Module. Customers/support are required to enable a given Module in order to have those events logged. The log operation is not run when a Module is not enabled. All debug log events classified with a Severity of Error and above will always be logged. This ensures that both support and customers will be able to see these important events even when their respective debug log Module isn't enabled.



---

Debug logging is disabled by default.

---

## Debug logging commands

### clear debug buffer

```
clear debug buffer
```

#### Description

Clears all debug logs. Using the `show debug buffer` command will only display the logs generated after the `clear debug buffer` command.

#### Examples

Clearing all generated debug logs:

```
switch# show debug buffer
-----
show debug buffer
-----
2018-10-14:09:10:58.558710|lldpd|LOG_DEBUG|MSTR||LLDP|LLDP_CONFIG|No Port cfg
changes
2018-10-14:09:10:58.558737|lldpd|LOG_DEBUG|MSTR||LLDP|LLDP_EVENT|lldpd_stats_run
entered at time 8257199
2018-10-14:09:10:58.569317|lldpd|LOG_DEBUG|MSTR||LLDP|LLDP_CONFIG|No Port cfg
changes
2018-10-14:09:11:21.881907|hpe-sysmond|LOG_INFO|MSTR|SYSMON|SYSMON_CONFIG|Sysmon
poll interval changed to 32

switch# clear debug buffer
switch# show debug buffer
-----
```

```

show debug buffer
-----
-----
2018-10-14:09:13:24.481407|hpe-sysmond|LOG_INFO|MSTR||SYSMON|SYSMON_CONFIG|Sysmon
poll interval changed to 51

```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## debug {all | <MODULE-NAME>}

```

debug {all | <MODULE-NAME>} [<SUBMODULE-NAME>] [severity
    (emer|crit|alert|err|notice|warning|info|debug)] {port <PORT-NAME> |
    vlan <VLAN-ID> | ip <IP-ADDRESS> | mac <MAC-ADDRESS> |
    vrf <VRF-NAME> | instance <INSTANCE-ID>}
no debug {all | <MODULE-NAME>} [<SUBMODULE-NAME>] {port | vlan | ip | mac |
    vrf | instance}

```

## Description

Enables debug logging for modules or submodules by name, with optional filtering by specific criteria. The `no` form of this command disables debug logging.

Parameter	Description
all	Enables debug logging for all modules.
<MODULE-NAME>	Enables debug logging for a specific module. For a list of supported modules, enter the <code>debug</code> command followed by a space and a question mark (?).
<SUBMODULE-NAME>	Enables debug logging for a specific submodule. For a list of supported submodules, enter the <code>debug &lt;MODULE-NAME&gt;</code> command followed by a space and a question mark (?).
severity (emer crit alert err notice warning info debug)	Selects the minimum severity log level for the destination. If a severity is not provided, the default log level is <code>debug</code> . Optional.
emer	Specifies storage of debug logs with a severity level of <code>emergency</code> only.
crit	Specifies storage of debug logs with severity level of <code>critical</code> and above.

Parameter	Description
alert	Specifies storage of debug logs with severity level of <code>alert</code> and above.
err	Specifies storage of debug logs with severity level of <code>error</code> and above.
notice	Specifies storage of debug logs with severity level of <code>notice</code> and above.
warning	Specifies storage of debug logs with severity level of <code>warning</code> and above.
info	Specifies storage of debug logs with severity level of <code>info</code> and above.
debug	Specifies storage of debug logs with severity level of <code>debug</code> (default).
port	Displays debug logs for the specified port, for example <code>1/1/1</code> .
vlan <VLAN-ID>	Displays debug logs for the specified VLAN. Provide a VLAN from 1 to 4094.
ip <IP-ADDRESS>	Displays debug logs for the specified IP Address.
mac <MAC-ADDRESS>	Displays debug logs for the specified MAC Address, for example <code>A:B:C:D:E:F</code> .
vrf <VRF-NAME>	Displays debug logs for the specified VRF.
instance <INSTANCE-ID>	Displays debug logs for the specified instance. Provide an instance ID from 1 to 255.

## Examples

```
switch# debug all
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## debug db

```
debug db {all | sub-module} [level <MINIMUM-SEVERITY>] [filter]
```

```
no debug db {all | sub-module} [level <MINIMUM-SEVERITY>] [filter]
```

## Description

Enables or disables debug logging for a db module or submodules, with an option to filter by specific criteria.

The `no` form of this command disables debug logging for the db module or submodule.

Parameter	Description
<code>all</code>	Enables all submodules for the db log.
<code>sub-module</code>	Enables debug logging for supported submodules. Specify <code>rx</code> or <code>tx</code> debug logs.
<code>filter</code>	Specifies supported filters for the db log. Specify <code>table</code> , <code>column</code> , or <code>client</code> . Optional
<code>severity</code> ( <code>emer crit alert err notice warning info debug</code> )	Selects the minimum severity log level for the destination. If a severity is not provided, the default log level is <code>debug</code> . Optional.
<code>emer</code>	Specifies storage of debug logs with a severity level of <code>emergency</code> only.
<code>crit</code>	Specifies storage of debug logs with severity level of <code>critical</code> and above.
<code>alert</code>	Specifies storage of debug logs with severity level of <code>alert</code> and above.
<code>err</code>	Specifies storage of debug logs with severity level of <code>error</code> and above.
<code>notice</code>	Specifies storage of debug logs with severity level of <code>notice</code> and above.
<code>warning</code>	Specifies storage of debug logs with severity level of <code>warning</code> and above.
<code>info</code>	Specifies storage of debug logs with severity level of <code>info</code> and above.
<code>debug</code>	Specifies storage of debug logs with severity level of <code>debug</code> (default).

## Usage

DBlog is a high performance, configuration, and state database server logging infrastructure where a user can log the transactions which are sent or received by clients to the configuration and state database server. It can be enabled through the CLI and REST, and also supports filters where a user can filter out logs on the basis of table, column, or client. It is helpful for debugging when the user wants to debug an issue with a particular client, table, or column combination. It is not enabled by default. A combination of filters can also be applied to filter out messages based on table, column, and client.

There are three submodules for the "db" module:

1. `all`: When All is enabled, no filters are applied to any of the debug logs, even if other submodules are configured with filters.
2. `tx`: If enabled, only the replies and notifications sent out for the initial and incremental updates are logged.
3. `rx`: If enabled, only the transactions sent to the configuration and state database server are logged.

The keyword `all` may be used to enable or disable debug logging for all sub-modules. Also a combination of filters can be used to filter the message types.

If the table or client filter is applied, then the messages belonging to this specific table or client will be logged. The column filter can also be applied to further filter messages on a table, providing a mechanism to filter messages on a column. The table and client filter can be used in combination or separately, but column can only be used in conjunction with table.

## Examples

Configuring all submodules with severity `debug`:

```
switch# debug db all severity debug
```

Configuring the `tx` submodule with `table Interface` filter and severity `debug`:

```
switch# debug db tx table Interface severity debug
```

Configuring the `rx` submodule with `table Interface column statistics` filter and severity `debug`:

```
switch# debug db rx table Interface column statistics severity debug
```

Disabling the `rx` submodule:

```
switch# no debug db rx
```

Disabling the `tx` submodule `table Interface`:

```
switch# no debug db tx table Interface
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## debug destination

```
debug destination {syslog | file | console | buffer} [severity
(emer|crit|alert|err|notice|warning|info|debug)]
no debug destination {syslog | file | console}
```

### Description

Sets the destination for debug logs and the minimum severity level for each destination

The `no` form of this command unsets the destination for debug logs.

Parameter	Description
{syslog   file   console   buffer}	Selects the destination to store debug logs. Required.
syslog	Specifies that the debug logs are stored in the <code>syslog</code> .
file	Specifies that debug logs are stored in <code>file</code> .
console	Specifies that debug logs are stored in <code>console</code> .
buffer	Specifies that debug logs are stored in <code>buffer</code> (default).
severity (emer crit alert err notice warning info debug)	Selects the minimum severity log level for the destination. If a severity is not provided, the default log level is <code>debug</code> . Optional.
emer	Specifies storage of debug logs with a severity level of emergency only.
crit	Specifies storage of debug logs with severity level of critical and above.
alert	Specifies storage of debug logs with severity level of alert and above.
err	Specifies storage of debug logs with severity level of error and above.
notice	Specifies storage of debug logs with severity level of notice and above.
warning	Specifies storage of debug logs with severity level of warning and above.
info	Specifies storage of debug logs with severity level of info and above.
debug	Specifies storage of debug logs with severity level of debug (default).

### Usage



Events that have a severity equal to or higher than the configured severity level are stored in the designated destination. The product defaults to `buffer` for destination and `debug` as a severity level.

## Examples

```
switch# debug destination syslog severity alert
switch# debug destination console severity info
switch# debug destination file severity warning
switch# debug destination buffer severity err
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## show debug

```
show debug [vsx-peer]
```

### Description

Displays the enabled debug types.

Parameter	Description
<code>vsx-peer</code>	Shows the output from the VSX peer switch. If the switches do not have the VSX configuration or the ISL is down, the output from the VSX peer switch is not displayed. This parameter is available on switches that support VSX.

## Examples

```
switch# show debug
-----
-
module sub_module severity vlan port ip mac instance vrf
-----
-
all all err 1 1/1/1 10.0.0.1 1a:2b:3c:4d:5e:6f 2
abcd
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## show debug buffer

```
show debug buffer [module <MODULE-NAME> | severity
(emer|crit|alert|err|notice|warning|info|debug)]
```

### Description

Displays debug logs stored in the specified debug buffer with optional filtering by module or severity.

Parameter	Description
<MODULE-NAME>	Filters debug logs displayed by the specified module name.
severity (emer crit alert err notice warning info debug)	Displays debug logs with a specified severity level. Defaults to debug. Optional.
emer	Displays debug logs with a severity level of emergency only.
crit	Displays debug logs with a severity level of critical and above.
alert	Displays debug logs with a severity level of alert and above.
err	Specifies storage of debug logs with severity level of error and above.
notice	Specifies storage of debug logs with severity level of notice and above.
warning	Displays debug logs with a severity level of warning and above.
info	Displays debug logs with a severity level of info and above.
debug	Displays debug logs with a severity level of debug (default).

### Examples

```
switch# show debug buffer

-----
show debug buffer
-----
2017-03-06:06:51:15.089967|hpe-sysmond|SYSMON|SYSMON_CONFIG|LOG_INFO|Sysmon poll
interval changed to 20
```

### Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## show debug destination

show debug destination [vsx-peer]

### Description

Displays the configured debug destination and severity.

Parameter	Description
vsx-peer	Shows the output from the VSX peer switch. If the switches do not have the VSX configuration or the ISL is down, the output from the VSX peer switch is not displayed. This parameter is available on switches that support VSX.

### Examples

```
switch# show debug destination
-----
                show debug destination
-----
CONSOLE:info
FILE:warning
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

Log rotation provides you with the ability to systematically rotate and archive any log files produced by the system. Log rotation reduces log space required on the switch. Log rotation rotates and compresses the log files based on size and/or period. Rotated log files are stored locally or transferred to a remote host using TFTP.

Optionally, notifications can be triggered if a log buffer percent full threshold is exceeded, giving you the opportunity to save the logs elsewhere before the buffers are rotated with the oldest data being overwritten.

### Log file paths

Only logs stored in the following files are rotated:

- Audit logs stored in the `/var/log/audit/audit.log` file
- Authentication logs stored in the `/var/log/auth.log` file.
- Event logs stored in the `/var/log/event.log` file.
- Logs of bad login attempts are stored in `/var/log/btmp`.
- Logs of the last login sessions are stored in `/var/log/wtmp`.
- NTP logs are stored in `/var/log/ntp.log`.

### About rotated log files

Rotated log files are compressed and stored locally in `/var/log/`, regardless of the remote host configuration. Rotated log files are stored with respective time extension to the granularity of hour in the format `file1-YYYYMMDDHH.gz` (for example, `messages-2015080715.gz`). Rotated log files are replaced when the number of old rotated log files exceeds three. The newly rotated log file replaces the oldest rotated log file.

TFTP, SFTP, or SCP are used to transfer rotated log files to a remote host. Only newly rotated log files are transferred to the remote host during the log rotation. Previously rotated log files are not re-transferred. After a log file is successfully transferred, it is removed from the switch.

### Log rotation troubleshooting

Some common log file rotation troubleshooting items are as follows.

#### Log files not transferred remotely

##### Symptom

Rotated log files are not transferred to a remote host.

##### Cause

- The remote host might not be reachable.
- The TFTP server on the remote host might not have sufficient privileges for file creation.

### Action

1. Verify that the remote host is reachable.
2. Ensure that the TFTP server is configured with the required file creation permissions.
3. For example, on the TFTP-D-HPA server, change the configuration file in `/etc/default/tftpd-hpa` to include `-c` in `TFTP_OPTIONS`. (for example, `TFTP_OPTIONS="--secure -c`).

## Log rotation not occurring immediately after max file size

### Symptom

Log rotation does not occur immediately after the maximum file size for the log file is reached.

### Cause

The log rotation checks the size of the file on the first minute of every hour. If the maximum file size is reached in the meantime, the log rotation does not occur until the next hourly check of the file size.

### Action

Log rotation is working as designed. The log rotation feature is designed to check the file size on an hourly basis.

## Log rotation not occurring regardless of period

### Symptom

Log rotation is not happening regardless of the `period` value.

### Cause

Log files are not rotated when they are empty files (the log file size is zero).

### Action

Log rotation occurs when the log file size is greater than zero.

## Log rotation commands

### logging threshold

```
logging threshold {audit-log | auth-log | event-log} <THRESHOLD%>
no logging threshold {audit-log | auth-log | event-log} [<THRESHOLD%>]
```

### Description

Selects the logging buffer notification threshold for the specified logging buffer. Whenever the logging buffer space consumption exceeds the selected threshold (percent of buffer capacity), a `LOG_BUFFER_ALMOST_FULL` event and SNMP RMON trap is triggered. This gives you the opportunity to save the logs elsewhere before the buffers are rotated with the oldest data being overwritten.

Also, a `LOG_BUFFER_WRAPPED` event and SNMP RMON trap is triggered if the logging buffer capacity is fully consumed and the log buffer is rotated with the oldest data being overwritten.

The `no` form of this command resets the logging buffer warning threshold to its default of 90 (percent).

Parameter	Description
<code>audit-log</code>	Selects the audit log.
<code>auth-log</code>	Selects the authentication log.
<code>event-log</code>	Selects the event log.
<code>&lt;THRESHOLD%&gt;</code>	Selects the notification threshold as a percent that the selected logging buffer is full. Available percent values for <code>auth-log</code> , <code>event-log</code> , <code>security log</code> : <b>15 30 50 70 90 100</b> Available percent values for <code>audit-log</code> : <b>50 100</b>

## Examples

Setting the audit log threshold:

```
switch(config)# logging threshold audit-log 100
```

Setting the authentication log threshold:

```
switch(config)# logging threshold auth-log 50
```

Setting the event log threshold:

```
switch(config)# logging threshold event-log 70
```

Setting the security log threshold:

```
switch(config)# logging threshold security-log 70
```

Resetting the audit log threshold to its default of 50:

```
switch(config)# no logging threshold audit-log
```

Resetting the authentication log threshold to its default of 90:

```
switch(config)# no logging threshold auth-log
```

Resetting the event log threshold to its default of 90:

```
switch(config)# no logging threshold event-log
```

Resetting the security log threshold to its default of 90:

```
switch(config)# no logging threshold security-log
```

## Command History

Release	Modification
10.09	Command introduced.

## Command Information

Platforms	Command context	Authority
All platforms	config	Administrators or local user group members with execution rights for this command.

## logrotate maxsize

```
logrotate maxsize <MAX-SIZE>  
no logrotate maxsize
```

### Description

Specifies the maximum allowed log file size.

A log file that exceeds either the `logrotate maxsize` or the `logrotate period` (whichever happens first), triggers rotation of the log file.

The `no` form of this command resets the size of the log file to the default (100 MB).

Parameter	Description
<MAX-SIZE>	Specifies the allowed size the log file can reach before it is compressed and stored locally or transferred to a remote host. Range: 10 to 200 MB. Default: 100 MB.

### Examples

Setting the maximum log file size:

```
switch(config)# logrotate maxsize 24
```

Resetting the maximum log file size to its default of 100 MB:

```
switch(config)# no logrotate maxsize
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	config	Administrators or local user group members with execution rights for this command.

## logrotate period

```
logrotate period {daily | hourly | monthly | weekly}
no logrotate period
```

### Description

Sets the log file rotation time period. Defaults to daily.

A log file that exceeds either the `logrotate maxsize` or the `logrotate period` (whichever happens first), triggers rotation of the log file.

The `no` form of this command resets the log rotation period to the default of daily.

Parameter	Description
daily	Rotates log files on a daily basis (default) at 0:01.
hourly	Rotates log files every hour at the first second of the hour.
monthly	Rotates log files monthly on the first day of the month at 00:01.
weekly	Rotates log files once a week on Sunday at 00:01.

### Examples

Setting a weekly period:

```
switch(config)# logrotate period weekly
```

Resetting the period to its default of daily:

```
switch(config)# no logrotate period
```

### Command History

Release	Modification
10.07 or earlier	--

### Command Information

Platforms	Command context	Authority
All platforms	config	Administrators or local user group members with execution rights for this command.

## logrotate target



```
logrotate target <URI> [vrf <VRF_NAME>]
no logrotate target [<URI>] [vrf <VRF_NAME>]
```

## Description

Using TFTP, sends the rotated log files to a specified remote host identified by Universal Resource Identifier (URI).

The `no` form of this command resets the target to the default, which stores the rotated and compressed log files locally in `/var/log/`.

## Command context

Parameter	Description
<URI>	Specifies the URI of the remote host. The default directory is local. tftp://{{<IPV4_ADDR> <IPV6_ADDR>} <HOST>} [/ <i>&lt;DIRECTORY&gt;</i> ]
<VRF_NAME>	Specifies the VRF name (Default: default).

## Usage

- Rotated log files are compressed and stored locally in the path `/var/log/` regardless of the remote host configuration.
- Log storage locations on the switch included in the log rotate are as follows:
  - Authentication logs are stored in `/var/log/auth.log`.
  - Event logs are stored in `/var/log/audit/audit.log`.
  - Audit logs are stored in `/var/log/event.log`.
  - Logs of bad login attempts are stored in `/var/log/btmp`.
  - Logs of the last login sessions are stored in `/var/log/wtmp`.
  - NTP logs are stored in `/var/log/ntp.log`.

## Examples

Setting an IPv4 target:

```
switch(config)# logrotate target tftp://192.168.1.132
```

Setting an IPv4 target with a directory:

```
switch(config)# logrotate target tftp://192.168.1.132/logrotate/
```

Setting an IPv4 target with the default VRF:

```
switch(config)# logrotate target tftp://192.168.1.132 vrf mgmt
```

Setting an IPv6 target with the default VRF:

```
switch(config)# logrotate target tftp://2001:db8:0:1::128 vrf default
```

Resetting the target to local:

```
switch(config)# no logrotate target
```

## Command History

Release	Modification
10.09	Updated the syntax and examples.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	config	Administrators or local user group members with execution rights for this command.

## show logrotate

```
show logrotate [vsx-peer]
```

### Description

Shows the log rotate configuration.

Parameter	Description
vsx-peer	Shows the output from the VSX peer switch. If the switches do not have the VSX configuration or the ISL is down, the output from the VSX peer switch is not displayed. This parameter is available on switches that support VSX.

### Examples

```
switch# show logrotate
Logrotate configurations :
Period           : weekly
Maxsize         : 20MB
Target          : tftp://2001:db8:0:1::128 vrf mgmt
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

<b>Platforms</b>	<b>Command context</b>	<b>Authority</b>
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

---

# Switch system and hardware commands

---

Switch system and hardware commands are general commands used to configure fundamental settings on the switch.



---

Refer to the Fundamentals Guide to view the switch system and hardware commands.

---

# Chapter 5

## Reboot reasons

---

The `show boot-history` command displays the following reboot reasons for the management module:

### Reboot reasons for management module

#### Reboots handled through database

Parameter	Description
Reboot requested by user	A user requested a switch reboot through the CLI or web UI.
Reset button pressed	The switch detected a short-press of the reset button.
Backplane fault	A backplane fault occurred.
Configuration change	A configuration change resulted in a reboot.
Console error	Console failed to start.
Fabric fault	A fabric fault occurred.
All line modules faulted	A zero line card condition occurred.
Redundancy switchover requested	A user requested a redundancy switchover.
Redundant Management communication timeout	The standby management module has taken over from an unresponsive active management module.
Redundant Management election timeout	A failure to elect a standby management module in the allotted time.
Critical service fault (error)	A daemon critical to switch operation has stopped functioning. An extra error string may be present to describe the error in detail.
VSX software update	Reset triggered by a VSX software update.
Chassis critical temperature	Chassis operating temperature exceeded.
Chassis insufficient fans	Insufficient fans to cool the chassis.
Chassis unsupported PSUs/fans	Unsupported or misconfigured PSUs or system fans.
Management module critical temperature	Management module operating temperature exceeded.

#### Uncontrolled reboots

- ops-switchd crashed
- ovsdb-server crashed
- Reset
  - Software thermal reset
  - Power on reset
  - Watchdog reset
  - CPU request reset
  - cold reset
  - Long press reset
  - Jumper reset



---

The resets are not applicable for 8320, 8325, and 9300 Switch series.

---

- switchd\_agent crashed

Event logging logs events generated by daemons, processes, and plug-ins running within the switch software. The event logging framework captures the event logs in a system journal by updating the journal fields and meta data.

### Showing and clearing events

The `clear events` command is used to clear the event log of all events. The `show events` command is used to show all event logs generated by the switch since the last reboot. See the *Switch system and hardware commands chapter* of the Fundamentals Guide for information on these commands. The time stamp for event log messages generated from the Service OS indicates when the event log messages were transferred to the event log after a switch boot and not when the issue occurred. See the *Security Guide* for information about accounting logs.

Network configuration validator (NCV) is a configuration troubleshooting tool that helps to detect switch configuration anomalies using a set of feature configuration templates. NCV helps to detect misconfigurations, identity incomplete or inter-dependent configurations, and mutually exclusive configurations.

NCV only displays possible warnings and does not recommend any configuration changes. NCV does not detect configuration issues based on network topologies.

## Showing and clearing events

The `clear events` command is used to clear the event log of all events. The `show events` command is used to show all event logs generated by the switch since the last reboot. See the *Switch system and hardware commands chapter* of the Fundamentals Guide for information on these commands.

The time stamp for event log messages generated from the Service OS indicates when the event log messages were transferred to the event log after a switch boot and not when the issue occurred.

See the *Security Guide* for information about accounting logs.

## Network configuration validation commands

### switch config-validator

```
switch config-validator [config <CONFIG-NAME>] [feature <feature>] [mode {consistency | vsx-sync}] [format {cli | json}]
```

#### Description

Runs configuration validation to detect configuration anomalies.

Parameter	Description
config	Specifies configuration to be validated. The default configuration is <code>running-config</code> .
feature <feature>	Specifies the name of the feature to be validated.
mode	Specifies configuration validation mode. The default is <code>consistency</code> .
consistency	Validates feature configuration for consistency check.
vsx-sync	Validates VSX configuration synchronization between VSX peers for VSX enabled features.
format	Specifies the results display format. The default is <code>cli</code> .



## Examples

Running configuration validation with switches for the vsx feature.

```
switch (config)# switch config-validator config running-config feature vsx
Line number 36: Configuration `system-mac <VSX_SYSTEM_MAC>` is recommended
Line number 36: Multi chassis configuration is recommended for VSX redundancy
```

## Command History

Release	Modification
10.10	Command introduced.

## Command Information

Platforms	Command context	Authority
8325 8360 9300 10000	Manager (#)	Administrators or local user group members with execution rights for this command.

To effectively diagnose various issues arising at the switch, different types of data are copied out using copy commands for further analysis.

Use the `copy core-dump` command to copy the core-dump of a daemon crash.

Use the `copy show-tech` command to capture the status of the feature.

If there is feature misbehavior, use the `copy support-files feature` command to copy all feature related information for further analysis. Additionally use `copy support-log` and `copy diag-dump` to copy information that helps to analyze the internal behavior of a feature/daemon.

Use `copy command-output` to copy any `show` command's output to remote destinations or USB storage. These files can be copied to a remote destination using sftp/tftp, additionally they can also be stored in the USB storage.

## Supportability copy commands

### copy checkpoint

```
copy checkpoint <CHECKPOINT-NAME> {<STORAGE-URL> | <REMOTE-URL>}
```

#### Description

Copies the checkpoint using TFTP, SFTP, SCP, or USB.

Parameter	Description
<CHECKPOINT-NAME>	Specifies the checkpoint name.
{<STORAGE-URL>   <REMOTE-URL>}	Select either the storage URL or the remote URL for the destination of the copied command output. Required.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb}:/<FILE>
<REMOTE-URL>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"><li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>▪ {sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li></ul>

#### Examples

Copying checkpoint chpt to a remote URL:

```
switch# copy checkpoint chpt scp://root@10.0.1.1/config vrf mgmt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Auditors or Administrators or local user group members with execution rights for this command. Auditors can execute this command from the auditor context (auditor>) only.

## copy command-output

```
copy command-output "<COMMAND>" {<STORAGE-URL> | <REMOTE-URL> [vrf <VRF-NAME>]}
```

### Description

Copies the specified command output using TFTP, SFTP, SCP, or USB.

Parameter	Description
<COMMAND>	Specifies the command from which you want to obtain its output. Required. Users with auditor rights can specify these two commands only: show accounting log show events
{<STORAGE-URL>   <REMOTE-URL> [vrf <VRF-NAME>]}	Select either the storage URL or the remote URL for the destination of the copied command output. Required.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb}:/<FILE>
<REMOTE-URL>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"><li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>▪ {sftp://   scp://&lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li></ul>
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.

### Examples

Copying the output from the `show events` command to a remote URL:

```
switch# copy command-output "show events" tftp://10.100.0.12/file
```

Copying the output from the `show tech` command to a remote URL with a VRF named `mgmt`:

```
switch# copy command-output "show tech" scp://user@10.100.0.12/file vrf mgmt
```

Copying the output from the `show tech` command to a remote URL with a VRF named `mgmt`:

```
switch# copy command-output "show tech" tftp://10.100.0.12/file vrf mgmt
```

Copying the output from the `show events` command to a file named `events` on a USB drive:

```
switch# copy command-output "show events" usb:/events
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Auditors or Administrators or local user group members with execution rights for this command. Auditors can execute this command from the auditor context (auditor>) only.

## copy core-dump daemon

```
copy core-dump daemon <DAEMON-NAME>[:<INSTANCE-ID>] <REMOTE-URL> [vrf <VRF-NAME>]
```

### Description

Copies the core-dump from the specified daemon using TFTP, SFTP, SCP, or USB.

Parameter	Description
<DAEMON-NAME>	Specifies the name of the daemon. Required.
[:<INSTANCE-ID>]	Specifies the instance of the daemon core dump. Optional.
<REMOTE_URL>	Specifies the remote destination URL. Required. The syntax of the URL is the following: Syntax: <ul style="list-style-type: none"><li>{tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>{sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li></ul>
vrf <VRF-NAME>	Specifies the VRF name. If no VRF name is provided, the VRF named <code>default</code> is used. Optional.

### Examples

Copying the core dump from daemon ops-vland to a remote URL with a VRF named mgmt:

```
switch# copy core-dump daemon ops-vland sftp://abc@10.0.14.211/vland_coredump.xz
vrf mgmt
```

Copying the core dump from daemon ops-vland to a remote URL with a VRF named mgmt:

```
switch# copy core-dump daemon ops-vland scp://abc@10.0.14.211/vland_coredump.xz
vrf mgmt
```

Copying the core dump from daemon ops-switchd to a USB drive:

```
switch# copy core-dump daemon ops-switchd usb:/switchd
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
8320 8325 8360 9300 10000	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy core-dump kernel

```
copy core-dump kernel <REMOTE-URL> [vrf <VRF-NAME>]
```

### Description

Copies a kernel core dump using TFTP or SFTP.

Parameter	Description
<REMOTE-URL>	Specifies the URL to copy the command output. Required. Syntax: <ul style="list-style-type: none"><li>{tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;] [;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>{sftp://   scp://&lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;} [:&lt;PORT&gt;]/&lt;FILE&gt;</li></ul>
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.

### Examples

Copying the kernel core dump to the URL:

```
switch# copy core-dump kernel tftp://10.100.0.12/kernel_dump.tar.gz
```

Copying the kernel core dump to the URL with the VRF named mgmt:

```
switch# copy core-dump kernel tftp://10.100.0.12/kernel_dump.tar.gz vrf mgmt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
8320 8325 8360 9300 10000	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy core-dump kernel <STORAGE-URL>

```
copy core-dump kernel <STORAGE-URL>
```

### Description

Copies the kernel core dump to a USB drive.

Parameter	Description
<STORAGE-URL>	Specifies the USB to copy command output. Required. Syntax: {usb} : / <FILE>

### Examples

Copying the kernel core dump to a USB drive:

```
switch# copy core-dump kernel usb:/kernel.tar.gz
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
8320 8325 8360 9300 10000	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy diag-dump feature <FEATURE>

copy diag-dump feature <FEATURE> {<REMOTE-URL> [vrf <VRF-NAME>] | <STORAGE-URL>}

### Description

Copies the specified diagnostic information using TFTP, SFTP, SCP, or USB.

Parameter	Description
<FEATURE>	The name of a feature, for example <code>aaa</code> or <code>vrrp</code> . Required.
{<REMOTE-URL> [vrf <VRF-NAME>   <STORAGE-URL>]}	Select either the remote URL or the storage URL for the destination of the copied command output. Required.
<REMOTE-URL>	Specifies the remote destination URL. Required. The syntax of the URL is the following: Syntax: <ul style="list-style-type: none"> <li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;] [;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li> <li>▪ {sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li> </ul>
vrf <VRF-NAME>	Specifies the VRF name. If no VRF name is provided, the VRF named <i>default</i> is used. Optional.
<STORAGE-URL>	Specifies the USB to copy command output. Required. Syntax: {usb}:/<FILE>

### Examples

Copying the output from the `aaa` feature to a remote URL with a specified VRF:

```
switch# copy diag-dump feature aaa tftp://10.100.0.12/diagdump.txt vrf mgmt
```

Copying the output from the `aaa` feature to a remote URL with a specified VRF:

```
switch# copy diag-dump feature aaa scp://user@10.100.0.12/diagdump.txt vrf mgmt
```

Copying the output from the vrrp feature to a USB drive:

```
switch# copy diag-dump feature vrrp usb:/diagdump.txt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy diag-dump local-file

```
copy diag-dump local-file {<REMOTE-URL> [vrf <VRF-NAME>] | <STORAGE-URL>}
```

### Description

Copies the diagnostic information stored in a local file using TFTP, SFTP, SCP, or USB.

Parameter	Description
{<REMOTE-URL> [vrf <VRF-NAME>]  <STORAGE-URL>}	Select either the storage URL or the remote URL for the destination of the copied command output. Required.
<REMOTE-URL>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"><li>{tftp://}{&lt;IP&gt;   &lt;HOST&gt;}{:&lt;PORT&gt;}[;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>{sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}{:&lt;PORT&gt;}/&lt;FILE&gt;</li></ul>
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb} : /<FILE>

### Usage

The `copy diag-dump local-file` command can be used only after the information is captured. Run the `diag-dump <FEATURE-NAME> basic local-file` command before you enter the `copy diag-dump local-file` command to capture the diagnostic information for the specified feature into the local file.

### Examples

Copying the output from the local file to a remote URL:



```
switch# diag-dump aaa basic local-file
switch# copy diag-dump local-file tftp://10.100.0.12/diagdump.txt
```

Copying the output from the local file to a remote URL:

```
switch# diag-dump aaa basic local-file
switch# copy diag-dump local-file scp://user@10.100.0.12/diagdump.txt
```

Copying the output from the local file to a USB drive:

```
switch# diag-dump aaa basic local-file
switch# copy diag-dump local-file usb:/diagdump.txt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy <IMAGE>

copy <IMAGE> {<STORAGE-URL> | <REMOTE-URL>} <FILE-NAME> [vrf <VRF-NAME>]

## Description

Copies the image using TFTP, SFTP, SCP, or USB.

Parameter	Description
<IMAGE>	Specifies the image.
{<STORAGE-URL>   <REMOTE-URL>}	Select either the storage URL or the remote URL for the destination of the copied command output. Required.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb}:/<FILE>
<REMOTE-URL>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"><li>{tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;] [;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>{sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}</li></ul>

Parameter	Description
	[ :<PORT> ] / <FILE>
<FILE-NAME>	Specifies the file name.
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.

## Examples

Copying the image to a remote URL:

```
switch# copy scp://root@20.0.1.1/primary.swi primary vrf mgmt
```

Copying the secondary image to a remote URL:

```
switch# copy secondary scp://root@20.0.1.1/primary.swi vrf mgmt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Auditors or Administrators or local user group members with execution rights for this command. Auditors can execute this command from the auditor context (auditor>) only.

## copy running-config

```
copy running-config {<STORAGE-URL> | <REMOTE-URL>} /config <CONFIG-NAME> [vrf <VRF-NAME>]
```

## Description

Copies the running configuration using TFTP, SFTP, SCP, or USB.

Parameter	Description
{<STORAGE-URL>   <REMOTE-URL>}	Select either the storage URL or the remote URL for the destination of the copied command output. Required.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb} : / <FILE>
<REMOTE-URL>	Specifies the URL to copy the command output.

Parameter	Description
	Syntax: <ul style="list-style-type: none"> <li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li> <li>▪ {sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li> </ul>
config <CONFIG-NAME>	Specifies the running configuration.
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.

## Examples

Copying the running configuration to a remote URL:

```
switch# copy running-config scp://root@10.0.1.1/config cli vrf mgmt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Auditors or Administrators or local user group members with execution rights for this command. Auditors can execute this command from the auditor context (auditor>) only.

## copy show-tech feature

```
copy show-tech feature <FEATURE> {<REMOTE-URL> [vrf <VRF-NAME>] | <STORAGE-URL>}
```

### Description

Copies show tech output using TFTP, SFTP, SCP, and USB.

Parameter	Description
{<REMOTE-URL> [vrf <VRF-NAME>   <STORAGE-URL>]}	Select either the remote URL or the storage URL for the destination of the copied command output. Required.
<REMOTE-URL>	Specifies the URL to copy the command output. Required. <p>Syntax:</p> <ul style="list-style-type: none"> <li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li> </ul>

Parameter	Description
	<ul style="list-style-type: none"> <li>{sftp://   scp:// &lt;USER&gt;@}&lt;IP&gt;   &lt;HOST&gt; }[:&lt;PORT&gt;]/&lt;FILE&gt;</li> </ul>
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.
<STORAGE-URL>	Specifies the USB to copy command output. Required. Syntax: {usb}:/<FILE>

## Example

Copying show tech output of the aaa feature using SCP:

```
switch# copy show-tech feature aaa scp://user@10.0.0.12/file.txt vrf mgmt
```

Copying show tech output of the config feature using SFTP on the mgmt VRF:

```
switch# copy show-tech feature config sftp://root@10.0.0.1/tech.txt vrf mgmt
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy show-tech local-file

```
copy show-tech local-file {<REMOTE-URL> [vrf <VRF-NAME>] | <STORAGE-URL>}
```

### Description

Copies show tech output stored in a local file.

Parameter	Description
{<REMOTE-URL> [vrf <VRF-NAME>]   <STORAGE-URL> }	Select either the remote URL or the storage URL for the destination of the copied command output. Required.
<REMOTE-URL>	Specifies the URL to copy the command

Parameter	Description
	output. Syntax: <ul style="list-style-type: none"> <li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li> <li>▪ {sftp://   scp://&lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li> </ul>
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb}:/<FILE>

## Usage

Before entering the `copy show-tech local-file` command, run the `show tech` command with the `local-file` parameter for the specified feature.

## Examples

Copying the output to a remote URL:

```
switch# copy show-tech local-file tftp://10.100.0.12/file.txt
```

Copying the output to a remote URL:

```
switch# copy show-tech local-file scp://user@10.100.0.12/file.txt
```

Copying the output to a remote URL with a VRF:

```
switch# copy show-tech local-file tftp://10.100.0.12/file.txt vrf mgmt
```

Copying the output to a USB:

```
switch# copy show-tech local-file usb:/file
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy startup-config

```
copy startup-config {<STORAGE-URL> | <REMOTE-URL>}/config <CONFIG-NAME> [vrf <VRF-NAME>]
```

### Description

Copies the running configuration using TFTP, SFTP, SCP, or USB.

Parameter	Description
{<STORAGE-URL>   <REMOTE-URL>}	Select either the storage URL or the remote URL for the destination of the copied command output. Required.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb}:/<FILE>
<REMOTE-URL>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"> <li>{tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li> <li>{sftp://   scp://&lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li> </ul>
config <CONFIG-NAME>	Specifies the startup configuration.
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.

### Examples

Copying the startup configuration to a remote URL:

```
switch# copy startup-config scp://root@10.0.1.1/config json vrf mgmt
```

### Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

### Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Auditors or Administrators or local user group members with execution rights for this command. Auditors can execute this command from the auditor context (auditor>) only.

## copy support-files

```
copy support-files previous-boot <REMOTE-URL> [vrf <VRF-NAME>]
copy support-files all <REMOTE-URL> [vrf <VRF-NAME>]
copy support-files <REMOTE-URL> [vrf <VRF-NAME>]
copy support-files feature <FEATURE-NAME> <STORAGE-URL>
copy support-files previous-boot <STORAGE-URL>
copy support-files all <STORAGE-URL>
copy support-files <STORAGE-URL>
```

### Description

Copies a set of support files to a compressed file in tar.gz format using TFTP, SFTP, SCP, or USB or to a directory over SFTP or USB.

Parameter	Description
<FEATURE-NAME>	The feature name, for example, aaa.
{<REMOTE-URL> [vrf <VRF-NAME>]   <STORAGE-URL> }	Select either the remote URL or the storage URL for the destination of the copied command output. Required.
<REMOTE-URL>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"><li>▪ {tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;][;blocksize=&lt;VAL&gt;]/&lt;FILE&gt;</li><li>▪ {sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;]/&lt;FILE&gt;</li></ul>
vrf <VRF-NAME>	Specifies the VRF name. The default VRF name is default. Optional.
<STORAGE-URL>	Specifies the USB to copy command output. Syntax: {usb}:/<FILE>

### Usage

If feature name is not provided, the command collects generic system-specific support information. If a feature name is provided, the command collects feature-specific support information.

### Examples

Copying the support files to a remote URL:

```
switch# copy support-files tftp://10.100.0.12/file.tar.gz
```

Copying the support files of the lldp feature to a remote URL with a specified VRF:

```
switch# copy support-files feature lldp tftp://10.100.0.12/file.tar.gz vrf mgmt
```

Copying the support files from the previous boot to a remote URL with a specified VRF:

```
switch# copy support-files previous-boot scp://user@10.0.14.206/file.tar.gz vrf mgmt
```

Copying the support files to a USB:

```
switch# copy support-files usb:/file.tar.gz
```

Copying all the support files to a remote URL:

```
switch# copy support-files all sftp://root@10.0.14.216/file.tar.gz vrf mgmt
```

Copying the support files of the `config` feature to a USB:

```
switch# copy support-files feature config usb:/file.tar.gz
```

## Command History

Release	Modification
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy support-files local-file

```
copy support-files [feature <FEATURE-NAME> | previous-boot | all ] local-file {<REMOTE-URL> [vrf <VRF-NAME>] | <STORAGE-URL>}
```

### Description

Stores a set of support files as a compressed file in the switch locally and copies the preserved support files to a directory using TFTP, SFTP, SCP, or USB.



You can store only one copy of the support file locally. When you store a new support file, it overwrites the existing support file.

Parameter	Description
<FEATURE-NAME>	Specifies the feature for the support files.
<SLOT-ID>	Specifies the module slot number identifier for the support files. Range: 1/1-1/4, 1/7-1/10



Parameter	Description
<code>&lt;MEMBER-ID&gt;</code>	Specifies the VSF member identifier for the support files. Range: 1-10
<code>&lt;REMOTE-URL&gt;</code>	Specifies the URL to copy the support files.
<code>&lt;STORAGE-URL&gt;</code>	Specifies the USB to copy the support files.
<code>&lt;VRF-NAME&gt;</code>	Specifies the VRF name. The default VRF name is default.

## Usage

If the copy of the support files to the destination fails, an alternate option is prompted to store the collected data in the local file. This helps us to retry the copy process using `copy support-files local-file <REMOTE-URL/>STORAGE-URL>` without the need of regenerating the file.

## Examples

Copying support file to the local file:

```
switch# copy support-files local-file
switch# copy support-files feature lldp local-file
switch# copy support-files previous-boot local-file
switch# copy support-files all local-file
The operation to copy all support files could take a while to complete.
Do you want to continue (y/n)?
```

Copying local support file to a remote URL and storage URL:

```
switch# copy support-files local-file usb:/support_files_dir_path/
switch# copy support-files local-file scp://root@10.0.14.206//support_files_dir_path/abc.tar.gz vrf mgmt
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

## copy support-log

```
copy support-log <DAEMON-NAME> {<STORAGE-URL> | <REMOTE-URL> [vrf <VRF-NAME>]}
```

## Description

Copies the specified support log for a daemon TFTP, SFTP, SCP, or USB.

Parameter	Description
<code>&lt;DAEMON-NAME&gt;</code>	Specifies the name of the daemon. Required.
<code>{&lt;STORAGE-URL&gt;   &lt;REMOTE-URL&gt; [vrf &lt;VRF-NAME&gt;]}</code>	Selects either the storage URL or the remote URL for the destination of the copied command output. Required.
<code>&lt;STORAGE-URL&gt;</code>	Specifies the USB to copy command output. Syntax: <code>{usb} : /&lt;FILE&gt;</code>
<code>&lt;REMOTE-URL&gt;</code>	Specifies the URL to copy the command output. Syntax: <ul style="list-style-type: none"> <li>▪ <code>{tftp://}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;] [;blocksize=&lt;VAL&gt;] /&lt;FILE&gt;</code></li> <li>▪ <code>{sftp://   scp:// &lt;USER&gt;@}{&lt;IP&gt;   &lt;HOST&gt;}[:&lt;PORT&gt;] /&lt;FILE&gt;</code></li> </ul>
<code>vrf &lt;VRF-NAME&gt;</code>	Specifies the VRF name. If no VRF name is provided, the VRF named <i>default</i> is used. Optional.

## Usage

Fast log is a high performance, per-daemon binary logging infrastructure used to debug daemon level issues by precisely capturing the per daemon/module/functionalities debug traces in real time. Fast log, also referred to as support logs, helps users to understand the feature internals and its specific happenings. The fast logs from one daemon are not overwritten by other daemon logs because fast logs are captured as part of a daemon core dump. Fast logs are enabled by default.

## Examples

Copying the support log from the daemon hpe-fand to a remote URL:

```
switch# copy support-log hpe-fand tftp://10.100.0.12/file
```

Copying the support log from the daemon fand to a remote URL with a VRF named mgmt:

```
switch# copy support-log fand scp://user@10.100.0.12/file vrf mgmt
```

Copying the support log from the daemon hpe-fand to a remote URL with a VRF named mgmt:

```
switch# copy support-log hpe-fand tftp://10.100.0.12/file vrf mgmt
```

Copying the support log from the daemon hpe-fand to a USB:

```
switch# copy support-log hpe-fand usb:/support-log
```

## Command History

<b>Release</b>	<b>Modification</b>
10.08	Added SCP support.
10.07 or earlier	--

## Command Information

<b>Platforms</b>	<b>Command context</b>	<b>Authority</b>
All platforms	Manager (#)	Administrators or local user group members with execution rights for this command.

Traceroute is a computer network diagnostic tool for displaying the route (path), and measuring transit delays of packets across an Internet Protocol (IP) network. It sends a sequence of User Datagram Protocol (UDP) packets addressed to a destination host. The time-to-live (TTL) value, also known as hop limit, is used in determining the intermediate routers being traversed towards the destination.

### Traceroute over VXLAN

Traceroute and traceroute6 are supported over VXLAN from VTEP to VTEP, VTEP to host, and host to VTEP over L2 VNI/L3 VNI. A unique IP on VTEP should be used as the traceroute source and destination. Both source and destination VTEPs require AOS-CX 10.8 or later for this feature to work. Traceroute and traceroute6 over VXLAN cannot be used to track the underlay hops between VTEPs.



---

Traceroute and traceroute6 are only supported on the Aruba 8325, 8360, 9300 and 10000 switch series.

---

## Traceroute commands

### traceroute

```
traceroute {<IPV4-ADDR> | <HOSTNAME>} [ip-option loosesourceroute <IPV4-ADDR>] [dstport <NUMBER> | maxttl <NUMBER> | minttl <NUMBER> | probes <NUMBER> | timeout <TIME>] [vrf <VRF-NAME>] source {<IPV4-ADDR> | <IFNAME>}
```



---

Traceroute over VXLAN with `ip-option loosesourceroute` on L3VNI is not supported.

---

### Description

Uses traceroute for the specified IPv4 address or hostname with or without optional parameters.

Parameter	Description
IPv4-address <IPV4-ADDR>	Specifies the IPv4 address.
hostname	Specifies the hostname of the device to traceroute.
ip-option	Specifies the IP option.
loosesourceroute <IPV4-ADDR>	Specifies the route for loose source record route. Enter one or more intermediate router IP addresses separated by ',' for loose source routing.
dstport <NUMBER>	Specifies the destination port, <1-34000>. Default: 33434
maxttl <NUMBER>	Specifies the maximum number of hops to reach the destination, <1-255>. Default: 30

Parameter	Description
<code>minttl &lt;NUMBER&gt;</code>	Specifies the Minimum number of hops to reach the destination, <1-255>. Default: 1
<code>probes &lt;NUMBER&gt;</code>	Specifies the number of probes, <1-5>. Default: 3
<code>timeout &lt;TIME&gt;</code>	Specifies the traceroute timeout in seconds, <1-60>. Default: 3 seconds
<code>vrf &lt;VRF-NAME&gt;</code>	Specifies the virtual routing and forwarding (VRF) to use .
<code>source {&lt;IPV4-ADDR&gt;   &lt;IFNAME&gt;}</code>	Specifies the source IPv4 address or interface name.

## Usage

Traceroute is a computer network diagnostic tool for displaying the route (path), and measuring transit delays of packets across an Internet Protocol (IP) network. It sends a sequence of User Datagram Protocol (UDP) packets addressed to a destination host. The time-to-live (TTL) value, also known as hop limit, is used in determining the intermediate routers being traversed towards the destination.

## Examples

```
switch# traceroute 10.0.10.1
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
 1  10.0.40.2  0.002ms  0.002ms  0.001ms
 2  10.0.30.1  0.002ms  0.001ms  0.001ms
 3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute localhost
traceroute to localhost (127.0.0.1), 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
 1  127.0.0.1  0.018ms  0.006ms  0.003ms

switch# traceroute 10.0.10.1 maxttl 20
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 20 hops max, 3 sec. timeout, 3
probes
 1  10.0.40.2  0.002ms  0.002ms  0.001ms
 2  10.0.30.1  0.002ms  0.001ms  0.001ms
 3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute 10.0.10.1 minttl 1
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
 1  10.0.40.2  0.002ms  0.002ms  0.001ms
 2  10.0.30.1  0.002ms  0.001ms  0.001ms
 3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute 10.0.10.1 dstport 33434
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
 1  10.0.40.2  0.002ms  0.002ms  0.001ms
 2  10.0.30.1  0.002ms  0.001ms  0.001ms
 3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute 10.0.10.1 probes 2
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 30 hops max, 3 sec. timeout, 2
probes
 1  10.0.40.2  0.002ms  0.002ms
```

```

2  10.0.30.1  0.002ms  0.001ms
3  10.0.10.1  0.001ms  0.002ms

switch# traceroute 10.0.10.1 timeout 5
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 30 hops max, 5 sec. timeout, 3
probes
1  10.0.40.2  0.002ms  0.002ms  0.001ms
2  10.0.30.1  0.002ms  0.001ms  0.001ms
3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute localhost vrf red
traceroute to localhost (127.0.0.1), 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
1  127.0.0.1  0.003ms  0.002ms  0.001ms

switch# traceroute localhost mgmt
traceroute to localhost (127.0.0.1), 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
1  127.0.0.1  0.018ms  0.006ms  0.003ms

switch# traceroute 10.0.10.1 maxttl 20 timeout 5 minttl 1 probes 3 dstport 33434
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 20 hops max, 5 sec. timeout, 3
probes
1  10.0.40.2  0.002ms  0.002ms  0.001ms
2  10.0.30.1  0.002ms  0.001ms  0.001ms
3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute 10.0.10.1 ip-option loosesourceroute 10.0.40.2
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 30 hops max, 3 sec. timeout, 3
probes
1  10.0.40.2  0.002ms  0.002ms  0.001ms
2  10.0.30.1  0.002ms  0.001ms  0.001ms
3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute 10.0.10.1 ip-option loosesourceroute 10.0.40.2 maxttl 20
timeout 5 minttl 1 probes 3 dstport 33434
traceroute to 10.0.10.1 (10.0.10.1) , 1 hops min, 20 hops max, 5 sec. timeout, 3
probes
1  10.0.40.2  0.002ms  0.002ms  0.001ms
2  10.0.30.1  0.002ms  0.001ms  0.001ms
3  10.0.10.1  0.001ms  0.002ms  0.002ms

switch# traceroute 10.0.0.2 source 10.0.0.1
traceroute to 10.0.0.2 (10.0.0.2), 30 hops max
1  10.0.0.2  0.299ms  0.155ms  0.115ms

switch# traceroute 10.0.0.2 source 1/1/1
traceroute to 10.0.0.2 (10.0.0.2), 30 hops max
1  10.0.0.2  0.479ms  0.222ms  0.171ms

```

## Command History

Release	Modification
10.08	Added source IP address and source interface name parameters.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Operator (>) or Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

## traceroute6

```
traceroute6 {<IPV6-ADDR> | <HOSTNAME>} [dstport <NUMBER> | maxttl <NUMBER> | probes <NUMBER> | timeout <TIME>] [vrf <VRF-NAME>] source {<IPV6-ADDR> | <IFNAME>}
```

### Description

Uses traceroute for the specified IPv6 address or hostname with or without optional parameters.

Parameter	Description
IPv6-address <IPV6-ADDR>	Specifies the IPv6 address.
hostname	Specifies the hostname of the device to traceroute.
dstport <NUMBER>	Specifies the destination port, <1-34000>. Default: 33434
maxttl <NUMBER>	Specifies the maximum number of hops to reach the destination, <1-255>. Default: 30
probes <NUMBER>	Specifies the number of probes, <1-5>. Default: 3
timeout <TIME>	Specifies the traceroute timeout in seconds, <1-60>. Default: 3 seconds
vrf <VRF-NAME>	Specifies the virtual routing and forwarding (VRF) to use, <VRF-NAME>.
source {<IPV6-ADDR>   <IFNAME>}	Specifies the source IPv6 address or interface name.

### Usage

Traceroute is a computer network diagnostic tool for displaying the route (path), and measuring transit delays of packets across an Internet Protocol (IP) network. It sends a sequence of User Datagram Protocol (UDP) packets addressed to a destination host. The time-to-live (TTL) value, also known as hop limit, is used in determining the intermediate routers being traversed towards the destination.

### Examples

```
switch# traceroute6 0:0::0:1
traceroute to 0:0::0:1 (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.117 ms 0.032 ms 0.021 ms

switch# traceroute6 localhost
traceroute to localhost (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.089 ms 0.03 ms 0.014 ms

switch# traceroute6 0:0::0:1 maxttl 30
traceroute to 0:0::0:1 (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
```

```

byte packets
 1 localhost (::1) 0.117 ms 0.032 ms 0.021 ms

switch# traceroute6 0:0::0:1 dsrport 33434
traceroute to 0:0::0:1 (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.117 ms 0.032 ms 0.021 ms

switch# traceroute6 0:0::0:1 probes 2
traceroute to 0:0::0:1 (::1) from ::1, 30 hops max, 3 sec. timeout, 2 probes, 24
byte packets
 1 localhost (::1) 0.117 ms 0.032 ms

switch# traceroute6 0:0::0:1 timeout 3
traceroute to 0:0::0:1 (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.117 ms 0.032 ms 0.021 ms

switch# traceroute6 localhost vrf red
traceroute to localhost (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.077 ms 0.051 ms 0.054 ms

switch# traceroute6 localhost mgmt
traceroute to localhost (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.089 ms 0.03 ms 0.014 ms

switch# traceroute6 0:0::0:1 maxttl 30 timeout 3 probes 3 dstport 33434
traceroute to 0:0::0:1 (::1) from ::1, 30 hops max, 3 sec. timeout, 3 probes, 24
byte packets
 1 localhost (::1) 0.117 ms 0.032 ms 0.021 ms

switch# traceroute6 2001::2 source 2001::1
traceroute to 2001::2 (2001::2) from 2001::1, 30 hops max, 3 sec. timeout, 3
probes, 24 byte packets
 1 2001::2 (2001::2) 0.4331 ms 0.3186 ms 0.1874 ms

switch# traceroute6 2001::2 source 1/1/1
traceroute to 2001::2 (2001::2) from 2001::1, 30 hops max, 3 sec. timeout, 3
probes, 24 byte packets
 1 2001::2 (2001::2) 0.6145 ms 0.4165 ms 0.1620 ms

```

## Command History

Release	Modification
10.08	Added source IP address and source interface name parameters.
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Operator (>) or Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.



The ping (Packet Internet Groper) command is a common method for troubleshooting the accessibility of devices. It uses Internet Control Message Protocol (ICMP) echo requests and ICMP echo replies to determine if another device is alive. It also measures the amount of time it takes to receive a reply from the specified destination. The ping command is mostly used to verify IP connectivity between two endpoints which could be switch to switch, host to host, or host to switch. The reply packet tells if the host received the ping and the amount of time it took to return the packet.

### Ping over VXLAN

Ping and ping6 are supported over VXLAN from VTEP to VTEP, VTEP to host, and host to VTEP over L2 VNI/L3 VNI. A unique IP on VTEP should be used as the source and destination. Both source and destination VTEPs require AOS-CX 10.8 or later for this feature to work.




---

Ping and ping6 are only supported on the Aruba 8325, 8360, and 9300 Switch series.

---

## Ping commands

### ping

```
ping <IPv4-ADDR> | <hostname> [data-fill <pattern> | datagram-size <size> |
  interval <time> | repetitions <number> | timeout <time> | tos <number> |
  ip-option {include-timestamp | include-timestamp-and-address | record-route} |
  vrf <vrfname> | do-not-fragment][source {IPv4-ADDR | IFNAME}]
```




---

Ping on VXLAN with ip-option such as include-timestamp-and-address, include-timestamp and record-route is not supported.

---

### Description

Pings the specified IPv4 address or hostname with or without optional parameters.

Parameter	Description
ping <IPv4-ADDR>	Selects the IPv4 address to ping.
<HOSTNAME>	Selects the hostname to ping. Range: 1-256 characters
data-fill <PATTERN>	Specifies the data pattern in hexadecimal digits to send. A maximum of 16 "pad" bytes can be specified to fill out the ICMP packet. Default: AB
datagram-size <SIZE>	Specifies the ping datagram size. Range: 0-65399, default: 100.
interval <TIME>	Specifies the interval between successive ping requests in

Parameter	Description
	seconds. Range: 1-60 seconds, default: 1 second.
repetitions <NUMBER>	Specifies the number of packets to send. Range: 1-10000 packets, default: Five packets.
timeout <TIME>	Specifies the ping timeout in seconds. Range: 1-60 seconds, default: 2 seconds.
tos <NUMBER>	Specifies the IP Type of Service to be used in Ping request. Range: 0-255
ip-option {include-timestamp   include-timestamp-and-address   record-route}	Specifies an IP option (record-route or timestamp option).
include-timestamp	Specifies the intermediate router time stamp.
include-timestamp-and-address	Specifies the intermediate router time stamp and IP address.
record-route	Specifies the intermediate router addresses.
vrf <VRF-NAME>	Specifies the virtual routing and forwarding (VRF) to use. When VRF option is not given, the default VRF is used.
source {IPv4-ADDR   IFNAME}	Specifies the source IPv4 address or interface to use.
do-not-fragment	Specifies the do-not-fragment (DF) bit in IP header of the Ping packet. This option does not allow the packet to be fragmented when it has to go through a segment with a smaller maximum transmission unit (MTU).

## Examples

Pinging an IPv4 address:

```
switch# ping 10.0.0.0
PING 10.0.0.0 (10.0.0.0) 100(128) bytes of data.
108 bytes from 10.0.0.0: icmp_seq=1 ttl=64 time=0.035 ms
108 bytes from 10.0.0.0: icmp_seq=2 ttl=64 time=0.034 ms
108 bytes from 10.0.0.0: icmp_seq=3 ttl=64 time=0.034 ms
108 bytes from 10.0.0.0: icmp_seq=4 ttl=64 time=0.034 ms
108 bytes from 10.0.0.0: icmp_seq=5 ttl=64 time=0.033 ms

--- 10.0.0.0 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.033/0.034/0.035/0.000 ms
```

Pinging the localhost:

```
switch# ping localhost
PING localhost (127.0.0.1) 100(128) bytes of data.
108 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.060 ms
108 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.035 ms
108 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.043 ms
108 bytes from localhost (127.0.0.1): icmp_seq=4 ttl=64 time=0.041 ms
108 bytes from localhost (127.0.0.1): icmp_seq=5 ttl=64 time=0.034 ms
```

```
--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.034/0.042/0.060/0.011 ms
```

Pinging a server with a data pattern:

```
switch# ping 10.0.0.2 data-fill 1234123412341234acde123456789012
PATTERN: 0x1234123412341234acde123456789012
PING 10.0.0.2 (10.0.0.2) 100(128) bytes of data.
108 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.207 ms
108 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.187 ms
108 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.225 ms
108 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.197 ms
108 bytes from 10.0.0.2: icmp_seq=5 ttl=64 time=0.210 ms

--- 10.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.187/0.205/0.225/0.015 ms
```

Pinging a server with a datagram size:

```
switch# ping 10.0.0.0 datagram-size 200
PING 10.0.0.0 (10.0.0.0) 200(228) bytes of data.
208 bytes from 10.0.0.0: icmp_seq=1 ttl=64 time=0.202 ms
208 bytes from 10.0.0.0: icmp_seq=2 ttl=64 time=0.194 ms
208 bytes from 10.0.0.0: icmp_seq=3 ttl=64 time=0.201 ms
208 bytes from 10.0.0.0: icmp_seq=4 ttl=64 time=0.200 ms
208 bytes from 10.0.0.0: icmp_seq=5 ttl=64 time=0.186 ms

--- 10.0.0.0 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4000ms
rtt min/avg/max/mdev = 0.186/0.196/0.202/0.016 ms
```

Pinging a server with an interval specified:

```
switch# ping 9.0.0.2 interval 2
PING 9.0.0.2 (9.0.0.2) 100(128) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.199 ms
108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.192 ms
108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.208 ms
108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.182 ms
108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.194 ms

--- 9.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 7999ms
rtt min/avg/max/mdev = 0.182/0.195/0.208/0.008 ms
```

Pinging a server with a specified number of packets to send:

```
switch# ping 9.0.0.2 repetitions 10
PING 9.0.0.2 (9.0.0.2) 100(128) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.213 ms
108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.204 ms
108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.201 ms
108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.184 ms
```

```
108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.202 ms
108 bytes from 9.0.0.2: icmp_seq=6 ttl=64 time=0.184 ms
108 bytes from 9.0.0.2: icmp_seq=7 ttl=64 time=0.193 ms
108 bytes from 9.0.0.2: icmp_seq=8 ttl=64 time=0.196 ms
108 bytes from 9.0.0.2: icmp_seq=9 ttl=64 time=0.193 ms
108 bytes from 9.0.0.2: icmp_seq=10 ttl=64 time=0.200 ms

--- 9.0.0.2 ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 8999ms
rtt min/avg/max/mdev = 0.184/0.197/0.213/0.008 ms
```

Pinging a server with a specified timeout:

```
switch# ping 9.0.0.2 timeout 3
PING 9.0.0.2 (9.0.0.2) 100(128) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.175 ms
108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.192 ms
108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.190 ms
108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.181 ms
108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.197 ms

--- 9.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4000ms
rtt min/avg/max/mdev = 0.175/0.187/0.197/0.007 ms
```

Pinging a server with the specified IP Type of Service:

```
switch# ping 9.0.0.2 tos 2
PING 9.0.0.2 (9.0.0.2) 100(128) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.033 ms
108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.034 ms
108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.031 ms
108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.034 ms
108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.031 ms

--- 9.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.031/0.032/0.034/0.006 ms
```

Pinging a local host with the specified VRF.

```
switch# ping localhost vrf red
PING localhost (127.0.0.1) 100(128) bytes of data.
108 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.048 ms
108 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.052 ms
108 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.044 ms
108 bytes from localhost (127.0.0.1): icmp_seq=4 ttl=64 time=0.036 ms
108 bytes from localhost (127.0.0.1): icmp_seq=5 ttl=64 time=0.055 ms

--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 0.036/0.047/0.055/0.006 ms
```

## Pinging the localhost with the default VRF:

```
switch# ping localhost vrf mgmt
PING localhost (127.0.0.1) 100(128) bytes of data.
108 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.085 ms
108 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.057 ms
108 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.047 ms
108 bytes from localhost (127.0.0.1): icmp_seq=4 ttl=64 time=0.038 ms
108 bytes from localhost (127.0.0.1): icmp_seq=5 ttl=64 time=0.059 ms

--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.038/0.057/0.085/0.016 ms
```

## Pinging a server with the intermediate router time stamp:

```
switch# ping 9.0.0.2 ip-option include-timestamp
PING 9.0.0.2 (9.0.0.2) 100(168) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.031 ms
TS:      59909005 absolute
        0
        0
        0

108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.034 ms
TS:      59910005 absolute
        0
        0
        0

108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.038 ms
TS:      59911005 absolute
        0
        0
        0

108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.035 ms
TS:      59912005 absolute
        0
        0
        0

108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.037 ms
TS:      59913005 absolute
        0
        0
        0

--- 9.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.031/0.035/0.038/0.002 ms
```

## Pinging a server with the intermediate router time stamp and address:

```
switch# ping 9.0.0.2 ip-option include-timestamp-and-address
PING 9.0.0.2 (9.0.0.2) 100(168) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.030 ms
TS:      9.0.0.2 60007355 absolute
```

```

9.0.0.2 0
9.0.0.2 0
9.0.0.2 0

108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.037 ms
TS: 9.0.0.2 60008355 absolute
9.0.0.2 0
9.0.0.2 0
9.0.0.2 0

108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.037 ms
TS: 9.0.0.2 60009355 absolute
9.0.0.2 0
9.0.0.2 0
9.0.0.2 0

108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.038 ms
TS: 9.0.0.2 60010355 absolute
9.0.0.2 0
9.0.0.2 0
9.0.0.2 0

108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.039 ms
TS: 9.0.0.2 60011355 absolute
9.0.0.2 0
9.0.0.2 0
9.0.0.2 0

--- 9.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.030/0.036/0.039/0.005 ms

```

Pinging a server with the intermediate router address:

```

switch# ping 9.0.0.2 ip-option record-route
PING 9.0.0.2 (9.0.0.2) 100(168) bytes of data.
108 bytes from 9.0.0.2: icmp_seq=1 ttl=64 time=0.034 ms
RR: 9.0.0.2
9.0.0.2
9.0.0.2
9.0.0.2

108 bytes from 9.0.0.2: icmp_seq=2 ttl=64 time=0.038 ms (same route)
108 bytes from 9.0.0.2: icmp_seq=3 ttl=64 time=0.036 ms (same route)
108 bytes from 9.0.0.2: icmp_seq=4 ttl=64 time=0.037 ms (same route)
108 bytes from 9.0.0.2: icmp_seq=5 ttl=64 time=0.035 ms (same route)

--- 9.0.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.034/0.036/0.038/0.001 ms

```

Pinging a server with do-not-fragment:

```

switch# ping 192.168.1.8 datagram-size 2000 do-not-fragment
PING 192.168.1.8 (192.168.1.8) 2000(2028) bytes of data.
2008 bytes from 192.168.1.8: icmp_seq=1 ttl=64 time=0.721 ms
2008 bytes from 192.168.1.8: icmp_seq=2 ttl=64 time=0.792 ms
2008 bytes from 192.168.1.8: icmp_seq=3 ttl=64 time=0.857 ms

```

```

2008 bytes from 192.168.1.8: icmp_seq=4 ttl=64 time=0.833 ms
2008 bytes from 192.168.1.8: icmp_seq=5 ttl=64 time=0.836 ms

--- 192.168.1.8 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4056ms
rtt min/avg/max/mdev = 0.721/0.807/0.857/0.048 ms

```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Operator (>) or Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

## ping6

```

ping6 {<IPv6-ADDR> | <HOSTNAME>} [data-fill <PATTERN> | datagram-size <SIZE> |
interval <TIME> | repetitions <NUMBER> | timeout <TIME> | vrrp <VRID> |
vrf <VRF-NAME> | source <IPv6-ADDR> | <IFNAME>]

```

## Description

Pings the specified IPv6 address or hostname with or without optional parameters. The VRRP option is provided to self-ping the configured link-local address on the VRRP group.

Parameter	Description
IPv6-ADDR	Selects the IPv6 address to ping.
HOSTNAME	Selects the hostname to ping. Range: 1-256 characters
data-fill <PATTERN>	Specifies the data pattern in hexadecimal digits to send. A maximum of 16 "pad" bytes can be specified to fill out the ICMP packet. Default: AB
datagram-size <SIZE>	Specifies the ping datagram size. Range: 0-65399, default: 100.
interval <TIME>	Specifies the interval between successive ping requests in seconds. Range: 1-60 seconds, default: 1 second.
repetitions <NUMBER>	Specifies the number of packets to send. Range: 1-10000 packets, default: Five packets.
timeout <TIME>	Specifies the ping timeout in seconds. Range: 1-60 seconds, default: 2 seconds.
vrrp <VRID>	Specifies the VRRP group ID.
vrf <VRF-NAME>	Specifies the virtual routing and forwarding (VRF) to use. When

Parameter	Description
	this option is not provided, the default VRF is used.
source <IPv6-ADDR>   <IFNAME>	Specifies the source IPv6 address or interface to use.

## Examples

Pinging an IPv6 address:

```
switch# ping6 2020::2
PING 2020::2(2020::2) 100 data bytes
108 bytes from 2020::2: icmp_seq=1 ttl=64 time=0.386 ms
108 bytes from 2020::2: icmp_seq=2 ttl=64 time=0.235 ms
108 bytes from 2020::2: icmp_seq=3 ttl=64 time=0.249 ms
108 bytes from 2020::2: icmp_seq=4 ttl=64 time=0.240 ms
108 bytes from 2020::2: icmp_seq=5 ttl=64 time=0.252 ms

--- 2020::2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4000ms
rtt min/avg/max/mdev = 0.235/0.272/0.386/0.059 ms
```

Pinging the localhost:

```
switch# ping6 localhost
PING localhost(localhost) 100 data bytes
108 bytes from localhost: icmp_seq=1 ttl=64 time=0.093 ms
108 bytes from localhost: icmp_seq=2 ttl=64 time=0.051 ms
108 bytes from localhost: icmp_seq=3 ttl=64 time=0.055 ms
108 bytes from localhost: icmp_seq=4 ttl=64 time=0.046 ms
108 bytes from localhost: icmp_seq=5 ttl=64 time=0.048 ms

--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.046/0.058/0.093/0.019 ms
```

Pinging a server with a data pattern:

```
switch# ping6 2020::2 data-fill ab
PATTERN: 0xab
PING 2020::2(2020::2) 100 data bytes
108 bytes from 2020::2: icmp_seq=1 ttl=64 time=0.038 ms
108 bytes from 2020::2: icmp_seq=2 ttl=64 time=0.074 ms
108 bytes from 2020::2: icmp_seq=3 ttl=64 time=0.076 ms
108 bytes from 2020::2: icmp_seq=4 ttl=64 time=0.075 ms
108 bytes from 2020::2: icmp_seq=5 ttl=64 time=0.077 ms

--- 2020::2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.038/0.068/0.077/0.015 ms
```

Pinging a server with a datagram size:

```
switch# ping6 2020::2 datagram-size 200
PING 2020::2(2020::2) 200 data bytes
208 bytes from 2020::2: icmp_seq=1 ttl=64 time=0.037 ms
```



```
208 bytes from 2020::2: icmp_seq=2 ttl=64 time=0.076 ms
208 bytes from 2020::2: icmp_seq=3 ttl=64 time=0.076 ms
208 bytes from 2020::2: icmp_seq=4 ttl=64 time=0.077 ms
208 bytes from 2020::2: icmp_seq=5 ttl=64 time=0.066 ms

--- 2020::2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3999ms
rtt min/avg/max/mdev = 0.037/0.066/0.077/0.016 ms
```

Pinging a server with an interval specified:

```
switch# ping6 2020::2 interval 5
PING 2020::2(2020::2) 100 data bytes
108 bytes from 2020::2: icmp_seq=1 ttl=64 time=0.043 ms
108 bytes from 2020::2: icmp_seq=2 ttl=64 time=0.075 ms
108 bytes from 2020::2: icmp_seq=3 ttl=64 time=0.074 ms
108 bytes from 2020::2: icmp_seq=4 ttl=64 time=0.075 ms
108 bytes from 2020::2: icmp_seq=5 ttl=64 time=0.075 ms

--- 2020::2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 19999ms
rtt min/avg/max/mdev = 0.043/0.068/0.075/0.014 ms
```

Pinging a server with a specified number of packets to send:

```
switch# ping6 2020::2 repetitions 6
PING 2020::2(2020::2) 100 data bytes
108 bytes from 2020::2: icmp_seq=1 ttl=64 time=0.039 ms
108 bytes from 2020::2: icmp_seq=2 ttl=64 time=0.070 ms
108 bytes from 2020::2: icmp_seq=3 ttl=64 time=0.076 ms
108 bytes from 2020::2: icmp_seq=4 ttl=64 time=0.076 ms
108 bytes from 2020::2: icmp_seq=5 ttl=64 time=0.071 ms
108 bytes from 2020::2: icmp_seq=6 ttl=64 time=0.078 ms

--- 2020::2 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 4999ms
rtt min/avg/max/mdev = 0.039/0.068/0.078/0.015 ms
```

Pinging a local host with the specified VRF.

```
switch# ping6 localhost vrf red
PING localhost(localhost) 100 data bytes
108 bytes from localhost: icmp_seq=1 ttl=64 time=0.038 ms
108 bytes from localhost: icmp_seq=2 ttl=64 time=0.050 ms
108 bytes from localhost: icmp_seq=3 ttl=64 time=0.039 ms
108 bytes from localhost: icmp_seq=4 ttl=64 time=0.040 ms
108 bytes from localhost: icmp_seq=5 ttl=64 time=0.027 ms

--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4001ms
rtt min/avg/max/mdev = 0.027/0.038/0.050/0.010 ms
```

Pinging the localhost with the default VRF:

```
switch# ping6 localhost vrf mgmt
PING localhost(localhost) 100 data bytes
```

```

108 bytes from localhost: icmp_seq=1 ttl=64 time=0.032 ms
108 bytes from localhost: icmp_seq=2 ttl=64 time=0.022 ms
108 bytes from localhost: icmp_seq=3 ttl=64 time=0.040 ms
108 bytes from localhost: icmp_seq=4 ttl=64 time=0.022 ms
108 bytes from localhost: icmp_seq=5 ttl=64 time=0.046 ms

--- localhost ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.022/0.032/0.046/0.010 ms

```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	Operator (>) or Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

## Troubleshooting

### Operation not permitted

#### Symptom

The switch displays an `operation not permitted` message when a user attempts to send a ping request.

#### Example:

```

switch# ping 100.1.2.10
PING 100.1.2.10 (100.1.2.10) 100(128) bytes of data
ping: sendmsg: Operation not permitted
ping: sendmsg: Operation not permitted
ping: sendmsg: Operation not permitted
ping: sendmsg: Operation not permitted
ping: sendmsg: Operation not permitted

--- 100.1.2.10 ping statistics ---
5 packets transmitted, 0 received, 100% packet loss, time 4000ms

```

#### Cause

When an ACL is applied to the Control Plane, sending a ping request may be denied. If the ping packet matches a drop entry in the ACL, applying a Control Plane may block traffic sent from the switch CLI ping command.

When this situation occurs, the following error message is displayed: `ping: sendmsg: Operation not permitted`. The message indicates that the ICMP echo request packet has not been sent and is blocked by the Control Plane ACL.

When this message is not displayed, the ping request packet has been sent correctly. A ping failure in this case represents a failure to receive the ICMP echo reply packet.



---

This message may also be displayed on 8320, 8325, or 9300 Series switches when an egress ACL is applied and is blocking the ping.

---

### Action

1. Modify the ACL to allow the ping traffic.
2. Unapply the ACL from egress (8400/8320/8325/9300 switches) or Control Plane.
3. Ping a destination which is not matched by the ACL. For example, if the ACL is blocking traffic based on destination IP. Depending on the ACL content, this might not always be possible like when the ACL blocks all ICMP packets.

## Network is unreachable

### Symptom

User receives a "network is unreachable" message on sending a ping request.

### Cause

The ping packet did not get sent, because the switch cannot find an interface with a route that leads to the destination for one of the following reasons:

- A configuration error, such as an interface having an incorrect IP address or subnet defined.
- DHCP having failed to assign an address at all.
- The user meant to ping out the management vrf, but forgot to add `vrf mgmt` to the ping command.

### Action

Adjust the switch configuration to ensure that a route to the destination network exists.

## Destination host unreachable

### Symptom

User receives a `Destination host unreachable` message on sending a ping request.

### Cause

This issue typically indicates that the host is down or otherwise not returning ICMP echo requests. It is also possible that an intermediate network hop is dropping the packets.

### Action

Investigate whether an intermediate hop is not returning pings by using the `traceroute` command. Check the intermediate hop, and then the endpoint. If the destination is another Aruba switch, it is possible that Ingress ACLs on that switch are blocking ping packets. In such cases, the configuration option on the destination switch should be examined.

Remote syslog enables the forwarding of syslog messages to the remote syslog server. The feature supports a maximum of four remote syslog servers. Only one configuration per remote syslog server is allowed. The remote syslog server supports TCP and UDP transport protocols and TLS to establish a connection. In addition to forwarding logs to the remote server, they can also be preserved in local storage.

When the client certificate associated with the syslog client is updated, the syslog client is restarted and a new TLS connection is established using the updated client certificate.

## Remote syslog commands

### logging

```
logging {<IPV4-ADDR> | <IPV6-ADDR> | <FQDN | HOSTNAME>} [ {udp [<PORT-NUM> ]}|{tcp  
[<PORT-NUM>] | {tls [<PORT-NUM> [auth-mode {certificate|subject-name}] [legacy-tls-  
renegotiation]]} [severity <LEVEL>] [vrf <VRF-NAME>] [include-auditable-events]  
[filter <FILTER-NAME>] [ rate-limit-burst <BURST> [rate-limit-interval <INTERVAL>] ]
```

```
no logging {<IPV4-ADDR> | <IPV6-ADDR> | <FQDN | HOSTNAME> }
```

### Description

Enables syslog forwarding to a remote syslog server.

The `no` form of this command disables syslog forwarding to a remote syslog server.

Parameter	Description
{<IPV4-ADDR>   <IPV6-ADDR>   <HOSTNAME>}	Selects the IPv4 address, IPv6 address, or host name of the remote syslog server. Required.
[udp [<PORT-NUM>]   tcp [<PORT-NUM>   tls [<PORT-NUM>]]	Specifies the UDP port, TCP port, or TLS port of the remote syslog server to receive the forwarded syslog messages.
udp [<PORT-NUM>]	Range: 1 to 65535. Default: 514
tcp [<PORT-NUM>]	Range: 1 to 65535. Default: 1470
tls [<PORT-NUM>]	Range: 1 to 65535. Default: 6514
include-auditable-events	Specifies that auditable messages are also logged to the remote syslog server.
severity <LEVEL>	Specifies the severity of the syslog messages: <ul style="list-style-type: none"><li>▪ <code>alert</code>: Forwards syslog messages with the severity of <code>alert</code> (6) and <code>emergency</code> (7).</li><li>▪ <code>crit</code>: Forwards syslog messages with the severity</li></ul>

Parameter	Description
	<ul style="list-style-type: none"> <li>of <code>critical</code> (5) and above.</li> <li>▪ <code>debug</code>: Forwards syslog messages with the severity of <code>debug</code> (0) and above.</li> <li>▪ <code>emerg</code>: Forwards syslog messages with the severity of <code>emergency</code> (7) only.</li> <li>▪ <code>err</code>: Forwards syslog messages with the severity of <code>err</code> (4) and above</li> <li>▪ <code>info</code>: Forwards syslog messages with the severity of <code>info</code> (1) and above. Default.</li> <li>▪ <code>notice</code>: Forwards syslog messages with the severity of <code>notice</code> (2) and above.</li> <li>▪ <code>warning</code>: Forwards syslog messages with the severity of <code>warning</code> (3) and above.</li> </ul>
<code>auth-mode</code>	<p>Specifies the TLS authentication mode used to validate the certificate.</p> <ul style="list-style-type: none"> <li>▪ <code>certificate</code>: Validates the peer using trust anchor certificate based authentication. Default.</li> <li>▪ <code>subject-name</code>: Validates the peer using trust anchor certificates as well as subject-name based authentication.</li> </ul>
<code>legacy-tls-renegotiation</code>	<p>Enables the TLS connection with a remote syslog server supporting legacy renegotiation.</p>
<code>filter &lt;FILTER-NAME&gt;</code>	<p>Specifies the name of the filter to be applied on the syslog messages.</p>
<code>rate-limit-burst &lt;BURST&gt;</code>	<p>Specifies the rate limit for the messages sent to the remote syslog server.</p>
<code>rate-limit-interval &lt;INTERVAL&gt;</code>	<p>Specifies the rate limit interval in seconds. Default: 30 Seconds</p>
<code>vrf &lt;VRF-NAME&gt;</code>	<p>Specifies the VRF used to connect to the syslog server. Optional. Default: <code>default</code></p>

## Examples

Enabling the syslog forwarding to remote syslog server 10.0.10.2:

```
switch(config)# logging 10.0.10.2
```

Enabling the syslog forwarding of messages with a severity of `err` (4) and above to TCP port 4242 on remote syslog server 10.0.10.9 with VRF `lab_vrf`:

```
switch(config)# logging 10.0.10.9 tcp 4242 severity err vrf lab_vrf
```

Disabling syslog forwarding to a remote syslog server:

```
switch(config)# no logging
```

Enabling syslog forwarding over TLS to a remote syslog server using subject-name authentication mode:

```
switch(config)# logging example.com tls auth-mode subject-name
```

Applying log filtering for syslog server forwarding:

```
switch(config)# logging 10.0.10.6 severity info filter filter_lldp_logs vrf mgmt
```

Applying log filtering and enabling the rate limit for syslog server forwarding over TCP port:

```
switch(config)# logging 10.0.10.2 tcp 3440 severity err vrf mgmt include-  
auditable-events filter filter_lldp_logs rate-limit-burst 3 rate-limit-interval 35
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	config	Administrators or local user group members with execution rights for this command.

## logging filter

```
logging filter <FILTER-NAME>
```

```
  [{enable | disable}]
```

```
  [<SEQUENCE-ID>] {permit | deny} [event-id <EVENT-ID-RANGE>] [includes <REGEX>]  
  [severity <COMPARISON-OPERATOR> <LEVEL>]
```

```
no <SEQUENCE-ID>
```

```
resequence <OLD-SEQUENCE-ID> <NEW-SEQUENCE-ID>
```

```
no logging filter <FILTER-NAME>
```

## Description

Creates a filter to restrict what event or debug logs are logged. A filter can be used to either permit or deny:

- The event logs from being generated on the switch, or
- The event or debug logs generated on the switch from being forwarded to a syslog server.

A filter is identified by a filter name and can have up to 20 rules or entries, each with a different sequence number, matching criteria, and corresponding action (deny or permit). When a filter is applied on a log, the log is matched against the criteria mentioned in the rules or entries in ascending numerical order of their sequence numbers until a matching entry is found. Once a matching entry is found, its corresponding action is applied on the log. If no matching rule is found, the default action (permit) is applied.

The `no` form of this command removes the filter.

Parameter	Description
<code>&lt;FILTER-NAME&gt;</code>	Specifies the unique name to identify the filter.
<code>enable</code>	Filter event logs generated on the switch.
<code>&lt;SEQUENCE-ID&gt;</code>	Specifies the filter criteria sequence number. Default: Increments by 10 from the largest sequence-id currently used in this filter.
<code>deny</code>	Prevents the matching log from being logged.
<code>permit</code>	Allows the matching log.
<code>&lt;event-id&gt;</code>	Matches logs by event ID. Specify an event ID or a range of event IDs. It supports a maximum of 100 event IDs.
<code>includes &lt;REGEX&gt;</code>	Matches the log message against a regular expression string.
<code>severity</code>	Matches the logs by severity level. The following options are used to compare the severity: <ul style="list-style-type: none"> <li>▪ <code>eq</code>: Match events of severity equal to the specified.</li> <li>▪ <code>ge</code>: Match events of severity greater than or equal to the specified.</li> <li>▪ <code>gt</code>: Match events of severity greater than the specified.</li> <li>▪ <code>le</code>: Match events of severity lesser than or equal to the specified.</li> <li>▪ <code>lt</code>: Match events of severity lesser than the specified.</li> </ul> The following are the severity levels: <ul style="list-style-type: none"> <li>▪ <code>alert</code>: Logs with the severity <code>alert</code> (6).</li> <li>▪ <code>crit</code>: Logs with the severity <code>critical</code> (5).</li> <li>▪ <code>debug</code>: Logs with the severity <code>debug</code> (0).</li> <li>▪ <code>emerg</code>: Logs with the severity <code>emergency</code> (7).</li> <li>▪ <code>err</code>: Logs with the severity <code>err</code> (4).</li> <li>▪ <code>info</code>: Logs with the severity <code>info</code> (1).</li> <li>▪ <code>notice</code>: Logs with the severity <code>notice</code> (2).</li> <li>▪ <code>warning</code>: Logs with the severity <code>warning</code> (3).</li> </ul>

## Usage

**Filtering event logs on the switch:** To permit or deny event logs from being generated on the switch. In this case, the matching event logs are filtered at generation. The denied event logs are neither logged to the switch events nor forwarded to any remote syslog servers. Multiple filters can be configured, but only one filter can be applied to filter the events on the switch. Such a filter can be chosen by adding the `enable` command under its configuration. Configuring the `enable` command under a new filter automatically removes it from the filter where it was previously used.

For example:

```
logging filter low_severity_logs
enable
10 deny severity lt info
```

This configuration denies the event logs which have a severity less than info.



---

If a filter contains `enable` command, it is not recommended to configure this filter in the `logging` command used for remote syslog server configuration. This is because, any event logs denied by the filter are already not available for forwarding to a remote server.

---

A filter with `enable` command will not affect debug logs. Consider the configuration in the following example of a filter with `enable` command and two rules applied `10 permit severity ge info` and `20 deny`. This implies permit only those event logs which have severity greater than or equal to `info`.

#### Example:

```
logging filter low_severity_logs
enable
10 permit severity ge info
20 deny
```

**Filtering event or debug logs when forwarding to a remote syslog server:** The filter name must be configured in the `logging` command that is used to configure remote syslog server. The logs will be generated on the switch and the filter only decides whether to deny or permit the syslog forwarding for the matching log. For example: `logging 10.0.10.6 filter filter_lldp_logs`



---

The filter affects debug logs only when the command `debug destination syslog` is configured on the switch.

---



---

The severity mentioned in the remote syslog server configuration using `logging` command under configuration context has more precedence than the severity mentioned in a filter entry. If a log with `warning` severity is permitted by a filter, but the remote syslog configuration has `err` mentioned in it, the log will not be forwarded to the remote syslog server (since `warning(3)` is lesser than `err(4)`). On the other hand, if a log with `err` severity is permitted by a filter and the remote syslog configuration has `severity warning` mentioned in it, the log will be forwarded to the remote syslog server.

---

## Examples

Configuring a new logging filter:

```
switch(config)# logging filter example_filter
```

To deny logs having event ID 1301 and a range of event IDs from 1305 to 1309:

```
switch(config-logging-filter)# 20 deny event-id 1301,1305-1309
```



To permit logs having event ID 1300:

```
switch(config-logging-filter)# 30 permit event-id 1300
```

To permit logs with severity greater than or equal to `err`:

```
switch(config-logging-filter)# 30 permit severity ge err
```

To deny logs with severity greater than `info`:

```
switch(config-logging-filter)# 30 deny severity gt info
```

To deny logs with event ID 1024 and a message matching the regular expression `LLDP`:

```
switch(config-logging-filter)# 40 deny event-id 1024 includes LLDP
```

Denying all logs:

```
switch(config-logging-filter)# 40 deny
```

Changing the sequence ID of an existing rule:

```
switch(config-logging-filter)# resequence 20 70
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	<code>config</code> and <code>config-logging-filter</code>	Administrators or local user group members with execution rights for this command.

## logging facility

```
logging facility {local0 | local1 | local2 | local3 | local4 | local5 | local6 | local7}  
no logging facility
```

### Description

Sets the logging facility to be used for remote syslog messages. Default: `local7`

The `no` form of this command disables the logging facility to be used for remote syslog messages.

Parameter	Description
{local0   local1   local2   local3   local4   local5   local6   local7}	<p>Selects the logging facility to be used for remote syslog messages. Required.</p> <p>Specifies the severity of the syslog messages:</p> <ul style="list-style-type: none"> <li>▪ local0</li> <li>▪ local1</li> <li>▪ local2</li> <li>▪ local3</li> <li>▪ local4</li> <li>▪ local5</li> <li>▪ local6</li> <li>▪ local7</li> </ul>

## Examples

Sets the local5 logging facility to be used for remote syslog messages:

```
switch(config)# logging facility local5
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	config	Administrators or local user group members with execution rights for this command.

## logging persistent-storage

```
logging persistent-storage [severity {alert|crit|debug|emerg|err|info|notice|warning}]
no logging persistent-storage
```

### Description

Enables or disables storage of logs in storage. Only logs of the specified severity and above will be preserved in the storage.

The `no` form of this command disables storage of logs in storage.

Parameter	Description
severity <LEVEL>	<p>Specifies the severity of the syslog messages:</p> <ul style="list-style-type: none"> <li>▪ <code>alert</code>: Preserves syslog messages with the severity of <code>alert</code> (6) and <code>emergency</code> (7)</li> <li>▪ <code>crit</code>: Preserves syslog messages with the severity of <code>critical</code> (5) and above. Default.</li> </ul>

Parameter	Description
	<ul style="list-style-type: none"> <li>▪ <code>debug</code>: Preserves syslog messages with the severity of <code>debug</code> (0) and above.</li> <li>▪ <code>emerg</code>: Preserves syslog messages with the severity of <code>emergency</code> (7) only.</li> <li>▪ <code>err</code>: Preserves syslog messages with the severity of <code>err</code> (4) and above.</li> <li>▪ <code>info</code>: Preserves syslog messages with the severity of <code>info</code> (1) and above.</li> <li>▪ <code>notice</code>: Preserves syslog messages with the severity of <code>notice</code> (2) and above.</li> <li>▪ <code>warning</code>: Preserves syslog messages with the severity of <code>warning</code> (3) and above.</li> </ul>

## Usage

These logs can be copied out by using the `copy support-files all` or `copy support-files previous-boot`.

## Examples

Enabling storage of logs in storage with severity `info`:

```
switch(config)#logging persistent-storage severity info
Logs will be written to storage and made available across reboot.
Do you want to continue (y/n)?
```

Disabling storage of logs in storage:

```
switch(config)# no logging persistent-storage
```

## Command History

Release	Modification
10.07 or earlier	--

## Command Information

Platforms	Command context	Authority
All platforms	<code>config</code>	Administrators or local user group members with execution rights for this command.

Service OS is an operating system that the customer only uses to fix filesystem corruption, download and update firmware, and other support related issues. HPE Service OS is a Linux distribution that acts as a standalone bootloader and recovery OS for AOS-CX-based switches. It is only accessible if the user is consoled into the switch. The main high level features provided include:

- Access to file system partitions for retrieval of logs, coredumps, and configuration for supportability purposes.
- Filesystem utilities to format and partition a corrupted storage disk.
- Management interface networking with TFTP to download and update a product image.
- Ability to boot primary and secondary firmware images (.SWI file) on the storage disk.
- Support for clearing the AOS-CX startup-config.
- Ability to not only clear the admin password for AOS-CX, but also change it in SVOS.
- Ability to set the secure mode to enhanced or standard.

This document covers the customer CLI commands available in Service OS, as well as a few non-CLI features.

## Service OS CLI login

### Description

If the user enters 0 at the boot menu prompt, they will be presented with a Service OS CLI login prompt. The user must enter the login account "admin" to log in. By default, Service OS does not require a password.

To reboot without logging in, enter **reboot** as the login user name.

There are two additional login accounts that execute a command without requiring a password: **reboot** and **zeroize**. Enter the login account **reboot** to reboot the management module and **zeroize** to initiate a zeroization process. The zeroize user account helps a user reset the admin user account's password.

### Example

```
ServiceOS GT.01.01.0001 switch ttyS0

To reboot without logging in, enter 'reboot' as the login user name.

switch login: admin

    Hewlett Packard
    Enterprise
SVOS>
...

...

ServiceOS GT.01.01.0001 switch ttyS0
```

```

To reboot without logging in, enter 'reboot' as the login user name.

switch login: reboot

    Hewlett Packard
    Enterprise
reboot: Restarting system
```

...

ServiceOS login: zeroize
This will securely erase all customer data, including passwords, and
reset the switch to factory defaults.
This action requires proof of physical access via a USB drive.
* Create a FAT32 formatted USB drive
* Create a file in the root directory of the USB drive named zeroize.txt
* Type the following serial number into the zeroize.txt file: 772632X1830018
* Insert the USB drive into the target module
* Confirm the following prompt to continue

Continue (y/n)? y
#####WARNING#####
This will securely erase all customer data and reset the switch
to factory defaults. This will initiate a reboot and render the
switch unavailable until the zeroization is complete.
This should take several minutes to one hour to complete.
#####WARNING#####

Continue (y/n)? y

reboot: Restarting system

```

## Service OS user accounts

Service OS provides a single admin login account. By default, no password is required to log in. Service OS will require a password if the Service OS admin user account password feature is enabled. This setting can be enabled or disabled in AOS-CX.

## Service OS boot menu

### Description

On boot, the user is presented with a Service OS version banner with version, build date, build time, build ID, and SHA strings.

The user is then shown the boot image profiles.

- Enter 0 to boot the Service OS login CLI.
- Enter 1 to boot the primary firmware image.
- Enter 2 to boot the secondary firmware image.
- If no input is given within 5 seconds, the default boot profile is selected. Alternatively, press Enter to select the default boot profile.

The image selected by the user during boot is a run-time decision only and will not persist across reboots. The default image can be configured using the `boot set-default` command.

## Example

```
ServiceOS Information:
  Version:          GT.01.01.0001
  Build Date:      2017-07-19 14:52:31 PDT
  Build ID:        ServiceOS:GT.01.01.0001:461519208911:201707191452
  SHA:            46151920891195cdb2267ea6889a3c6cbc3d4193

Boot Profiles:

0. Service OS Console
1. Primary Software Image [XL.10.xx.xxxx]
2. Secondary Software Image [XL.10.xx.xxxx]

Select profile(primary):
```



---

The (primary) string in the boot menu displays the default boot profile that will be booted after the timeout period. This string will change to (secondary) or (Service OS) depending on the current default boot option.

---

## Console configuration

During boot, Service OS communicates with the RJ45 serial console with a baud rate of 115200. There is no option to change the baud rate during boot.

Additionally, if a USB console is connected to the management module console port, input will automatically be switched over to use the USB console. Automatic switching to USB is consistent with the AOS-CX USB console behavior.



---

Console output always displays on both the RJ45 console port and the USB console port.

---

## AOS-CX boot

### Description

After the user has input a boot profile selection at the boot menu or the 5-second selection timeout has expired, Service OS will boot an AOS-CX image.

Service OS displays the following boot strings embedded in the product image header:

- Image name
- Image version
- Build ID
- Build date

Service OS will then present status and boot the image.

### Example

```
Booting primary software image...
Verifying Image...
Image Info:
```

```
Name: AOS-CX
Version: XL.01.01.0001
Build Id: AOS-CX:XL.01.01.0001:1a36111da4e0:201707171452
Build Date: 2017-07-17 14:52:27 PDT
```

```
Extracting Image...
Loading Image...
Done.
kexec: Starting new kernel
```

## File system access

### Description

When the user logs in to the Service OS CLI, they are presented with a limited file system. The user can use standard file system commands of `cd`, `ls`, and `pwd` to view and move through the file system.

On login, the user is first placed in the `/home` directory:

```
(C) Copyright 2017 Hewlett Packard Enterprise Development LP

                RESTRICTED RIGHTS LEGEND
Confidential computer software. Valid license from Hewlett Packard Enterprise
Development LP required for possession, use or copying. Consistent with FAR
12.211 and 12.212, Commercial Computer Software, Computer Software
Documentation, and Technical Data for Commercial Items are licensed to the
U.S. Government under vendor's standard commercial license.

To reboot without logging in, enter 'reboot' as the login user name.

ServiceOS login: admin
SVOS> pwd
/home
SVOS>
```

The home directory and the USB device (`/mnt/usb` and any sub directory) are the only writable directories available. These directories can be used as a staging location for downloading product images using TFTP. `/home` can also be used as temporary storage before copying files from the management module through TFTP or USB. Any changes made to `/home` will not persist across reboots or after booting an AOS-CX image.

The root `/` directory displays viewable directories:

```
SVOS> ls /
bin          coredump  lib        mnt         selftest
cli          home      logs       nos
SVOS>
```

The directories `coredump`, `selftest`, `nos`, and `logs` each provide the user access to an SSD partition mount. The user may read, but not write any file on these partitions.

These mount points allow the user to copy files on the SSD to a USB storage device or upload files using TFTP. Copying files from the SSD is intended to be used under the guidance of a support engineer (to upload logs or coredumps to HPE support).

USB storage device access is provided through the mount at `/mnt/usb`.

The remaining directories in the root file system bin, cli, and lib are not intended to be used by the customer.

## Service OS mount failure

### Description

If the SSD is detected as missing or any of the partitions could not be mounted, Service OS will force the user to boot to the Service OS console and display an error message indicating that recovery should be attempted using the format command.

### Example

```
(C) Copyright 2017 Hewlett Packard Enterprise Development LP

                          RESTRICTED RIGHTS LEGEND
Confidential computer software. Valid license from Hewlett Packard Enterprise
Development LP required for possession, use or copying. Consistent with FAR
12.211 and 12.212, Commercial Computer Software, Computer Software
Documentation, and Technical Data for Commercial Items are licensed to the
U.S. Government under vendor's standard commercial license.

To reboot without logging in, enter 'reboot' as the login user name.

Error, Could not mount the primary storage device.
This may be due to filesystem or device corruption.
Please attempt to recover using the "format" command.

ServiceOS login:
```

## Service OS CLI command list

### Description

After login to Service OS CLI, the user may enter the commands help or ? to get a full list of commands and a terse description for each command. The user may also enter <command> followed by --help to get more detailed help and usage for a specific command.

### Example

```
SVOS> ?
Available Commands:

    ? - Display help screen
    cd - Change the working directory
    pwd - Print the current working directory
    help - Display help screen
    boot - Boot a product image
    config-clear - Clears the startup-config
    erase - Securely erase storage devices on the management module
    format - Formats and partitions the primary storage device
    identify - Prints hardware identification information
    ip - Sets the OOBM Port Network Configuration
    mount - Mount a storage device
    ping - Send ICMP ECHO_REQUEST to network hosts (IPv4)
```



```
reboot - Reboots the Management Module
password - Set the admin account password
secure-mode - Sets or retrieves the secure mode setting
sh - Launch support shell
umount - Unmounts a storage device
update - Update a product image
version - Prints ServiceOS release version information
cat - Prints files to stdout
cp - Copy files and directories
du - Estimate file space usage
ls - List directory contents
md5sum - Compute and check md5 message digest
mkdir - Make directories
mv - Move (rename) files
rm - Remove files or directories
rmdir - Remove empty directories
tftp - Allows transfer of files to/from a remote machine
exit - Logout
```

Enter '<command> --help' for more info

## Service OS CLI features and limitations

The Service OS CLI provides basic shell functionality that allows you to execute commands and pass arguments to those commands only. The following features are not available:

- Input/output redirection (<, >, >>)
- Job control (&, fg, bg)
- Process piping (|)
- File globbing (\\*)



---

Even though the Service OS CLI does not provide file globbing capabilities, some commands may provide this functionality internally. An example is the `ls` command.

---

The following common features are available:

- Command history (Up Arrow) and search (Ctrl-R)
- Tab completion for file and folder names (not CLI commands)
- Command abort using Ctrl-C

## Service OS CLI commands

### boot

boot

#### Description

Presents you with the boot menu prompt. You can then specify which boot profile: primary, secondary, or Service OS console.

#### Example

Presenting the boot menu prompt:

```

SVOS> boot

ServiceOS Information:
  Version:          GT.01.01.0005
  Build Date:       2017-07-19 14:52:31 PDT
  Build ID:         ServiceOS:GT.01.01.0001:461519208911:201707191452
  SHA:             46151920891195cdb2267ea6889a3c6cbc3d4193

Boot Profiles:

0. Service OS Console
1. Primary Software Image [XL.01.01.0001]
2. Secondary Software Image [XL.01.01.0001]

Select profile(primary):

```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## cat

cat <FILENAME/DIRECTORY-NAME>

### Description

Prints the contents of a file to the console. The Service OS does not allow command output redirection, so this command is only useful for reading short text files.

| Parameter                 | Description                                            |
|---------------------------|--------------------------------------------------------|
| <FILENAME/DIRECTORY-NAME> | Shows the contents of the specified file or directory. |

### Example

Showing the contents of /nos/hosts:

```

SVOS> cat /nos/hosts
127.0.0.1          localhost.localdomain          localhost

SVOS>

```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## cd path

cd path

### Description

Changes the current working directory.

### Example

Changing the current working directory:

```
cd /
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## config-clear

config-clear

### Description

Configures the switch to set all configuration settings to factory default when the switch is restarted. The next time the switch starts, the current `startup-config` is renamed to `startup-config-fixme`, and a new `startup-config` is created with factory default settings.



Using this command is not the same as performing zeroization, which securely erases the entire primary storage and other devices, and not just the configuration.

### Example

Configuring the system to clear the switch configuration:

```
SVOS> config-clear
```

```
The switch configuration will be cleared.
```

```
Continue (y/n)? y
```

```
The system has been configured to clear the startup-config on the next boot. Please execute the 'boot' command to complete this action.
```

```
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## cp

```
cp [options] <SOURCE-FILENAME/SOURCE-DIRECTORY> <DESTINATION-FILENAME/DESTINATION-DIRECTORY>
```

## Description

Copies files or directories.

| Parameter | Description                                                        |
|-----------|--------------------------------------------------------------------|
| [options] | Selects the options for the command.                               |
| -d, -P    | Specifies the preservation of symlinks (default if -R).            |
| -a        | Same as -dpR.                                                      |
| R, -r     | Specifies recursiveness, all files, and subdirectories are copied. |
| -L        | Specifies the following of all symlinks.                           |
| -H        | Specifies the following of symlinks on command line.               |
| -p        | Specifies the preservation of file attributes if possible.         |
| -f        | Specifies the overwriting of a file or directory.                  |
| -i        | Specifies the prompting before an overwrite.                       |

| Parameter                                                       | Description                                              |
|-----------------------------------------------------------------|----------------------------------------------------------|
| <code>-l, -s</code>                                             | Specifies the creation of (sym) links.                   |
| <code>&lt;SOURCE-FILENAME/SOURCE-DIRECTORY&gt;</code>           | Specifies the name of the source file or directory.      |
| <code>&lt;DESTINATION-FILENAME/DESTINATION-DIRECTORY&gt;</code> | Specifies the name of the destination file or directory. |

## Example

Copying `/home/customers` directory to the `/home/clients` directory:

```
SVOS> cp /home/customers /home/clients
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## du

`du [options] <FILENAME/DIRECTORY-NAME>...`

## Description

Shows estimated disk space used for each file or directory or both.

| Parameter              | Description                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------|
| <code>[options]</code> | Selects the options for the command.                                                                      |
| <code>-a</code>        | Show file sizes.                                                                                          |
| <code>-L</code>        | Shows all symlinks.                                                                                       |
| <code>-H</code>        | Shows symlinks on a command line.                                                                         |
| <code>-d, N</code>     | Shows limited output to directories (and files with <code>-a</code> ) of depth less than <code>N</code> . |
| <code>-c</code>        | Shows the total disk space usage of all files or directories or both.                                     |
| <code>-l</code>        | Shows the count sizes if hard linked.                                                                     |

| Parameter                 | Description                                                             |
|---------------------------|-------------------------------------------------------------------------|
| -s                        | Shows only a total for each argument.                                   |
| -x                        | Does not show directories on different file systems.                    |
| -h                        | Show sizes in human readable format (1K, 243M, and 2G).                 |
| -m                        | Show sizes in megabytes.                                                |
| -k                        | Show sizes in kilobytes (default).                                      |
| <FILENAME/DIRECTORY-NAME> | Specifies the file or directory or both for displaying a size estimate. |

## Example

Estimating disk space for the /nos directory:

```
SVOS> du -ah /nos
196.4M /nos/primary.swi
196.4M /nos
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## erase zeroize

erase zeroize

### Description

Securely erases any user data contained on the SSD or other storage devices on the management module.



Back up all data before running this command or all user/config data will be lost.

## Example

Erasing user data:

```
SVOS> SVOS> erase --help
```

```

Usage: erase zeroize

Securely erases storage devices on the management module.
SVOS>
...
...
SVOS> erase zeroize
#####WARNING#####
This will securely erase all customer data and reset the switch
to factory defaults. This will initiate a reboot and render the
switch unavailable until the zeroization is complete.
This should take several minutes to one hour to complete.
#####WARNING#####

Continue (y/n)? y
reboot: Restarting system

ServiceOS Information:
  Version:      GT.01.01.0001
  Build Date:   2017-07-19 14:52:31 PDT
  Build ID:     ServiceOS:GT.01.01.0001:461519208911:201707191452
  SHA:         46151920891195cdb2267ea6889a3c6cbc3d4193

##### Preparing for zeroization #####

##### Storage zeroization #####
##### WARNING: DO NOT POWER OFF UNTIL #####
##### ZEROIZATION IS COMPLETE #####
##### This should take several minutes #####
##### to one hour to complete #####

##### Restoring files #####

```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## exit

exit

## Description

Logs the user out from the svos> prompt.

## Example

Logging the user out from the svos> prompt:

```
SVOS> exit
```

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To reboot without logging in, enter 'reboot' as the login user name.

ServiceOS login:

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## format

format

### Description

Configures the primary storage device with the correct partition and file system formatting. This command removes all pre-existing data on the primary storage device.

### Example

Configuring the primary storage device with the correct partition and file system formatting:

```
SVOS> format
#####WARNING#####
The following action will cause all data on
the primary storage device to be lost. After
formatting has completed, a reboot will be
initiated to complete storage initialization.
#####WARNING#####

Continue? (y/n): y

Working...This may take a few minutes...
```

## Command History



| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## identify

identify

### Description

Prints the version of the SVOS and of the UEFI BIOS.

### Example

Printing the version of the SVOS and of the UEFI BIOS:

Output from an 8320 switch:

```
SVOS> identify
mc svos_primary           : TL.01.01.0004
mc svos_secondary        : TL.01.01.0004
mc cpld/1                 : 8
mc cpld/2                 : 7
mc cpld/3                 : 7
mc uefi                   : TL-01-0013
mc uefi_capsule           : TL-01-0013
Support Info              : SE:0
```

Output from an 8325 switch:

```
SVOS> identify
mc svos_primary           : GL.01.01.0004
mc svos_secondary        : GL.01.01.0004
mc uefi                   : GL-01-0010
mc uefi_capsule           : GL-01-0010
Support Info              : SE:0
```

Output from a 9300 switch:

```
SVOS> identify
mc svos_primary           : CL.01.01.0004
mc svos_secondary        : CL.01.01.0004
mc uefi                   : CL-01-0010
mc uefi_capsule           : CL-01-0010
Support Info              : SE:0
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## ip

ip {show | dhcp | disable | addr <ADDR-NETMASK-GATEWAY>}

## Description

Shows or configures the port with a static IP address (IPv4 only) or enables the DHCP client on the port. An address is set only if a DHCP server is available to provide one.

| Parameter                                             | Description                                                                                                 |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| {show   dhcp   disable   addr <ADDR-NETMASK-GATEWAY>} | Selects the options for the OOBM port.                                                                      |
| show                                                  | Shows the OOBM port.                                                                                        |
| dhcp                                                  | Configures the port with a DHCP address.                                                                    |
| disable                                               | Disables the OOBM port.                                                                                     |
| addr <ADDR-NETMASK-GATEWAY>                           | Configures the port with a static IP address (IPv4 only). Specify address, netmask, and gateway as A.B.C.D. |

## Example

Configuring the port with a DHCP IP address:

```
SVOS> ip dhcp
SVOS> ip show
Interface   : Link Up
IP Address  : 10.0.26.17
Subnet Mask: 255.255.252.0
Gateway     : 10.0.24.1

SVOS> ip disable
SVOS> ip show
Interface   : Disabled
SVOS>
```

## Command History

## Release

## Modification

10.07 or earlier

--

## Command Information

| Platforms                             | Command context   | Authority                                                                          |
|---------------------------------------|-------------------|------------------------------------------------------------------------------------|
| 8320<br>8325<br>8360<br>9300<br>10000 | ServiceOS (SVOS>) | Administrators or local user group members with execution rights for this command. |

## ls

```
ls [<OPTIONS>] [<FILE-NME>]
```

## Description

This command lists directory contents.

| Parameter | Description                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| <OPTIONS> | Specifies options for the command.                                                                                                 |
| -l        | Shows one-column output.                                                                                                           |
| -a        | Shows entries which start with a period (.).                                                                                       |
| -A        | Shows output similar to -a, but excludes a period (.) and a double period (..).                                                    |
| -C        | Shows output list by columns.                                                                                                      |
| -x        | Shows output list by lines.                                                                                                        |
| -d        | Shows listing of directory entries instead of contents                                                                             |
| -L        | Follows symlinks.                                                                                                                  |
| -H        | Follows symlinks on the command line.                                                                                              |
| -R        | Recurse.                                                                                                                           |
| -p        | Appends a slash (/) to directory entries.                                                                                          |
| -F        | Appends an indicator to entries. An indicator can be as an asterisk (*) or slash (/) or equal sign (=) or at sign (@) or pipe ( ). |
| -l        | Shows the output in a long listing format.                                                                                         |
| -i        | Shows the list inode numbers.                                                                                                      |
| -n        | Shows a list of numeric UIDs and GIDs instead of names.                                                                            |

| Parameter                         | Description                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------|
| -s                                | Shows a list of allocated blocks.                                                  |
| -e                                | Shows in one column a list with the full date and time.                            |
| -h                                | Shows list sizes in human readable format (1K, 243M, 2G) with a one-column output. |
| -r                                | Shows in one column a sort in reverse order.                                       |
| -S                                | Shows in one column a sort by size.                                                |
| -X                                | Shows in the output sort by extension.                                             |
| -v                                | Shows in one column a sort by version.                                             |
| -c                                | With -l, it shows a sort in one column by ctime.                                   |
| -t                                | With -l, it shows a sort by mtime.                                                 |
| -u                                | With -l, sort by atime.                                                            |
| -c                                | With -l, it shows a sort in one column by ctime                                    |
| -w <N>                            | Assumes that the terminal has the number of columns wide as specified by <N>.      |
| --color[={always   never   auto}] | Controls color in the output.                                                      |
| <FILE-NAME>                       | Specifies the name of the file to list.                                            |

## Example

Listing directory contents:

```
SVOS> ls -la /nos
drwxr-xr-x  3 0      0      4096 Nov 21 03:19 .
drwxr-xr-x 11 0      0      220 Nov 21 03:21 ..
drwx----- 2 0      0      16384 Nov 21 03:20 lost+found
-rwxr-xr-x  1 0      0      205957424 Nov 21 03:19 primary.swi
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

# md5sum

md5sum [-c | -s | -w] [<FILE-NAME>]

## Description

This command computes and checks the MD5 message digest.

| Parameter      | Description                                                  |
|----------------|--------------------------------------------------------------|
| [-c   -s   -w] | Selects the options for the command.                         |
| -c             | Specifies to check the sums against the list in files.       |
| -s             | Specifies not output anything, status code shows success.    |
| -w             | Specifies to warn about improperly formatted checksum lines. |
| <FILE-NAME>    | Specifies the file name to run the checksum against.         |

## Example

Computing and checking the MD5 message digest for /nos/primary.swi:

```
SVOS> md5sum /nos/primary.swi
93ffc89e7ec357854704d8e450c4b7ab /nos/primary.swi
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

# mkdir

mkdir [-m | -p] [<DIRECTORY-NAME>]

## Description

This command makes directories.

| Parameter | Description                            |
|-----------|----------------------------------------|
| [-m   -p] | Specifies the options for the command. |
| -m        | Specifies the mode.                    |

| Parameter        | Description                                                                                 |
|------------------|---------------------------------------------------------------------------------------------|
| -p               | Specifies to make parent directories as needed with no errors for pre-existing directories. |
| <DIRECTORY-NAME> | Specifies the directory to create.                                                          |

## Example

Making the dir directory:

```
SVOS> mkdir dir
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## mount

mount <DEVICE>

### Description

This command mounts the SSD partitions to the following locations: /coredump, /logs, /nos, /selftest, and mounts the USB device to /mnt/usb.

Users can mount USB flash drives formatted as either FAT16 or FAT32 with a single partition.

| Parameter | Description                                                                       |
|-----------|-----------------------------------------------------------------------------------|
| <DEVICE>  | Specifies the device to be mounted. Supported device options include all and usb. |

## Examples

Mounting all of the SSD partitions:

```
SVOS> mount all
SVOS> mount usb
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## mv

mv [-f | -i | -n] <TARGET-DIRECTORY>

### Description

This command moves (renames) files.

| Parameter | Description                                  |
|-----------|----------------------------------------------|
| -f        | Specifies not to prompt before overwriting.  |
| -i        | Specifies to prompt before overwriting.      |
| -n        | Specifies to not overwrite an existing file. |

### Example

Moving the file named myfile:

```
svos> mv myfile
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## password (svos)

password

### Description

Sets the admin user account password for both Service OS and AOS-CX once the user boots into AOS-CX and saves the configuration. This will overwrite the previous password if one exists. User input is masked with asterisks.

This command is not available if enhanced secure mode is set.

## Example

Setting the admin account password:

```
SVOS> password
Enter password:*****
Confirm password:*****
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## ping

ping <HOST-IP-ADDRESS>

## Description

Pings network hosts for debug purposes.

| Parameter         | Description                    |
|-------------------|--------------------------------|
| <HOST-IP-ADDRESS> | Specifies the host IP address. |

## Example

Pinging a network host:

```
SVOS> ping 10.0.8.10
PING 10.0.8.10 (10.0.8.10): 56 data bytes
64 bytes from 10.0.8.10: seq=0 ttl=63 time=3.496 ms
64 bytes from 10.0.8.10: seq=1 ttl=63 time=0.367 ms
64 bytes from 10.0.8.10: seq=2 ttl=63 time=0.380 ms
64 bytes from 10.0.8.10: seq=3 ttl=63 time=0.282 ms
64 bytes from 10.0.8.10: seq=4 ttl=63 time=0.669 ms
^C
--- 10.0.8.10 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
```



```
round-trip min/avg/max = 0.282/1.038/3.496 ms
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms                             | Command context   | Authority                                                                          |
|---------------------------------------|-------------------|------------------------------------------------------------------------------------|
| 8320<br>8325<br>8360<br>9300<br>10000 | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## pwd

pwd

### Description

Displays the current working directory.

### Example

Displaying the current working directory:

```
SVOS> pwd
/home
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## reboot

reboot

### Description

Reboots the Management Module.

## Example

Rebooting the management module:

```
SVOS> reboot  
reboot: Restarting system
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## rm

```
rm [-f | -i | -R | -r] <FILE-NAME>
```

## Description

Removes files or directories.

| Parameter           | Description                                            |
|---------------------|--------------------------------------------------------|
| [-f   -i   -R   -r] | Selects the options for removing files or directories. |
| -f                  | Never prompt before removing files or directories.     |
| -i                  | Always prompt before removing files or directories.    |
| -R   -r             | Recursive.                                             |

## Example

Removing the file named `foo`:

```
SVOS> rm foo
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## rmdir

`rmdir [-p] <DIRECTORY-NAME>`

### Description

Removes empty directories.

| Parameter | Description                             |
|-----------|-----------------------------------------|
| -p        | Specifies to remove parent directories. |

### Example

Removing the empty `foo` directory:

```
SVOS> rmdir foo
SVOS>
```

### Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

### Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## secure-mode

`secure-mode <enhanced | standard | status>`

### Description

Sets the secure mode to enhanced or standard secure mode. Also can display the current secure mode. A zeroization is required before switching between enhanced and standard secure modes.

The command also displays a message notifying the user that they are already in the targeted secure mode.

### Example

Setting the secure mode to enhanced or standard:

```

SVOS> secure-mode --help
Usage: secure-mode <enhanced | standard | status>

Set or retrieve the secure mode setting. Requires a zeroization to change modes.
SVOS>
...

...

SVOS> secure-mode enhanced
#####WARNING#####
This will set the switch into enhanced secure mode. Before
enhanced secure mode is enabled, the switch must securely erase
all customer data and reset the switch to factory defaults.
This will initiate a reboot and render the switch unavailable
until the zeroization is complete.
This should take several minutes to one hour to complete.
#####WARNING#####

Continue (y/n)? y
reboot: Restarting system

...

...

SVOS> secure-mode standard
#####WARNING#####
This will set the switch into standard secure mode. Before
standard secure mode is enabled, the switch must securely erase
all customer data and reset the switch to factory defaults.
This will initiate a reboot and render the switch unavailable
until the zeroization is complete.
This should take several minutes to one hour to complete.
#####WARNING#####

Continue (y/n)? y
reboot: Restarting system

...

...

SVOS> secure-mode standard
#####WARNING#####
Secure mode is already set to standard. Setting it again will
repeat the zeroization process. The switch must securely erase
all customer data and reset the switch to factory defaults.
This will initiate a reboot and render the switch unavailable
until the zeroization is complete.
This should take several minutes to one hour to complete.
#####WARNING#####

Continue (y/n)? y
reboot: Restarting system

...

...

SVOS> secure-mode status
enhanced secure mode is set.
SVOS>

```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## sh

sh

### Description

Launches a bash shell for support purposes. To quit bash, enter `exit`. This command is not available if enhanced secure mode is set.

### Example

Launching a bash shell:

```
SVOS> sh
switch:/cli/fs/home#
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## umount

`umount <DEVICE>`

### Description

Unmounts the SSD partitions mounted to the following locations: `/coredump`, `/logs`, `/nos`, `/selftest`, and unmounts the USB device mounted to `/mnt/usb`.

| Parameter                   | Description                                                                                                    |
|-----------------------------|----------------------------------------------------------------------------------------------------------------|
| <code>&lt;DEVICE&gt;</code> | Specifies the device to be unmounted. Supported device options include <code>all</code> and <code>usb</code> . |

## Examples

Unmounting all devices:

```
SVOS> umount all
SVOS> umount usb
```

Unmounting a USB device:

```
SVOS> umount all
SVOS> umount usb
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## update

```
update {primary | secondary} <IMAGE>
```

### Description

Verifies and installs a product image. The user can select the primary or secondary boot profile to update and the location of the file.

| Parameter             | Description                                    |
|-----------------------|------------------------------------------------|
| {primary   secondary} | Selects either the primary or secondary image. |
| <IMAGE>               | Specifies the image name.                      |

## Examples

Updating the software image using TFTP:



The OOBM port is disabled on first boot and must be enabled using the `ip` command.

```
SVOS> ip dhcp
SVOS> ip show
Interface   : Link Up
IP Address  : 192.0.2.22
Subnet Mask : 255.255.200.20
Gateway     : 10.0.24.1
```

```

SVOS> tftp -g -r XL.10.00.0001.swi -l image.swi 192.4.8.10
XL.10.00.0001.swi 100% |*****| 178M 0:00:00 ETA
SVOS> ls
image.swi
SVOS> update primary image.swi
Updating primary software image...
Verifying image...
Done

```

## Update the software image using USB:



This example assumes that the user has preloaded a USB flash drive with the image to be updated. The image name on the flash drive is not important.

```

SVOS> mount usb
SVOS> ls /mnt/usb
image.swi
SVOS> update primary /mnt/usb/image.swi
Updating primary software image...
Verifying image...
Done

```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## tftp

tftp {-b | -g | -l <LOCAL-FILE> | -p | -r <REMOTE-FILE>} host [<PORT>]

## Description

Transfers files to and from a remote machine (TFTP a file).

| Parameter                              | Description                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| {-b   -g   -l   -p   -r <REMOTE-FILE>} | Selects the options for transferring a file.                                                                                    |
| -b                                     | Specifies the transfer blocks of size octets. The default blocksize is set to 1468, which can be overridden with the -b option. |
| -g                                     | Specifies to get a file.                                                                                                        |

| Parameter        | Description                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------|
| -l               | Specifies a local file.                                                                                         |
| -p               | Specifies to put a file in remote location.                                                                     |
| -r <REMOTE-FILE> | Specifies a remote file.                                                                                        |
| <PORT>           | Specifies the port for transfer. If no port option is specified, TFTP uses the standard UDP port 69 by default. |

## Example

Transferring files:

```
SVOS> tftp -b 65464 -g -r XL.10.00.0002.swi.swi 192.0.2.1
XL.10.00.0002 100% |*****| 178M 0:00:00 ETA
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms                             | Command context   | Authority                                                                          |
|---------------------------------------|-------------------|------------------------------------------------------------------------------------|
| 8320<br>8325<br>8360<br>9300<br>10000 | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

## version

version

## Description

Displays the following build strings:

- Version.
- Build date.
- Build time.
- Build ID.
- SHA.

## Example

Displaying version build strings:



```
SVOS> version
ServiceOS Information:
  Version:      GT.01.01.0001
  Build Date:   2017-07-19 14:52:31 PDT
  Build ID:     ServiceOS:GT.01.01.0001:461519208911:201707191452
  SHA:         46151920891195cdb2267ea6889a3c6cbc3d4193
SVOS>
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context   | Authority                                                                          |
|---------------|-------------------|------------------------------------------------------------------------------------|
| All platforms | ServiceOS (svos>) | Administrators or local user group members with execution rights for this command. |

The ISP (In-System Programming) feature provides an automated way to roll out updates to various programmable devices in an AOS-CX network switch, after the product has shipped. ISP is intended to run automatically either at boot time or as new modules are inserted into the chassis at runtime.

### Show tech command list for the ISP feature

| Task                                                            | Command                           |
|-----------------------------------------------------------------|-----------------------------------|
| Displaying versions of all present programmable devices.        | <code>show tech isp</code>        |
| Displaying stored log files from any ISP updates on the system. | <code>show tech update-log</code> |

See the *Command-Line Interface Guide* for additional information about the `show tech` commands.

### In-System Programming commands

#### clear update-log

```
clear update-log
```

#### Description

Clears stored log files of any In-System Programming updates on the system.

#### Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

#### Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | Manager (#)     | Administrators or local user group members with execution rights for this command. |

#### show needed-updates

```
show needed-updates [next-boot [primary|secondary]]
```

#### Description

Displays whether any programmable devices are in need of an update.

Without the `next-boot` parameter, this command displays needed updates relative to the currently running AOS-CX image.

With the `next-boot` parameter, this command displays needed updates relative to an AOS-CX image file in the persistent storage of the switch, which might be different from the currently running image. If either the `primary` or `secondary` parameter is specified, this command queries that specific AOS-CX image file. Otherwise, it queries the default AOS-CX image file as set by the most recent `boot system` or `boot set-default` command.

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | Manager (#)     | Administrators or local user group members with execution rights for this command. |

The 8320 switch only supports Boot-up Diagnostics (Power On Selftest aka POST).

Power On Self Test (POST) is the first task which verifies the hardware functionality of various modules during boot-up. Based on the criticality of the test, the selftest module decides whether to go ahead with the boot-up sequence of a particular subsystem or interface during a POST failure.

POST comprises of the following:

- **Register read/write**

This test checks for the registers and tables in the ingress pipeline of ASIC. It is always run during platform initialization only.

- **Front-end Port Loopback tests**

This is to verify the physical port front-end interface.

These tests check if a particular interface can function properly. A test failure would mean that the particular interface is marked as "Failed" and thus it would become unavailable for use.

This test is run when "no fastboot" is configured.

## Selftest commands

### fastboot

```
fastboot
no fastboot
```

#### Description

Enables fastboot for the system.

The `no` form of this command disables fastboot for the system.

#### Usage

When fastboot is enabled, most tests under a Power On Self Test (POST) are skipped. By default, fastboot is enabled.

After disabling fastboot, save switch configurations and then reboot for POST to run. POST verifies the hardware functionality of various modules during boot-up. Based on the criticality of the test, the selftest module decides whether to go ahead with the boot-up sequence of a particular subsystem or interface during a POST failure.

POST runs memory built-in selftest (BISTs) and front-end port loopback tests. Memory BISTs verify the internal and external memory blocks present in the module. The memory tables are critical for proper functionality of the system so any failures in these tests results in the corresponding subsystem to be marked as "Failed" and thus that subsystem is not available for use.

Front-end port loopback tests verify the physical port front-end interface. These tests check if a particular interface can function properly. A test failure means that a particular interface has been marked as "Failed" and is now unavailable for use.

## Examples

Enabling fastboot:

```
switch# configure terminal
switch(config)# fastboot
switch(config)# end
switch# show running-config
Current configuration:
!
!Version AOS-CX XL.10.00.0002
module 1/1 product-number jl363a
!
!
!
!
!
!
vlan 1
interface 1/1/1
    no shutdown
    no routing
```

Disabling fastboot:

```
switch# configure terminal
switch(config)# no fastboot
switch(config)# end
switch(config)# write mem
Configuration changes will take time to process, please be patient.
switch# show running-config
Current configuration:
!
!Version AOS-CX XL.10.00.0002
module 1/1 product-number jl363a
!
!
!
no fastboot
!
!
!
!
vlan 1
interface 1/1/1
    no shutdown
    no routing
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | config          | Administrators or local user group members with execution rights for this command. |

## show selftest

```
show selftest [brief] [vsx-peer]
show selftest line-module <SLOT-ID>
show selftest line-module <SLOT-ID> interface [brief] [vsx-peer]
show selftest interface [<PORT-NUM>] [vsx-peer]
```

### Description

Displays selftest results.

| Parameter   | Description                                                                                                                                                                                                                      |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [brief]     | Shows the selftest results as a brief description. Default.                                                                                                                                                                      |
| line-module | Shows the selftest results for a line module.                                                                                                                                                                                    |
| <SLOT-ID>   | Shows the selftest results for the slot ID of the line or fabric module.                                                                                                                                                         |
| <PORT-NUM>  | Shows the selftest results for the port number.                                                                                                                                                                                  |
| vsx-peer    | Shows the output from the VSX peer switch. If the switches do not have the VSX configuration or the ISL is down, the output from the VSX peer switch is not displayed. This parameter is available on switches that support VSX. |

### Examples

Displaying the output when fastboot is disabled on an 8320 switch:

```
switch# show selftest interface

Name          Status          ErrorCode       LastRunTime
-----
1/1/2         skipped         0x0
1/1/44        skipped         0x0
1/1/46        skipped         0x0

switch# show selftest interface 1/1/1

Name          Status          ErrorCode       LastRunTime
```

```
-----  
1/1/1      skipped      0x0
```

Displaying the output when fastboot is enabled:

```
switch# show selftest interface 1/1/2  
Name      Status      ErrorCode LastRunTime  
-----  
1/1/2     skipped     0x0  
  
switch# show selftest line-module 1/1 interface  
Name      Status      ErrorCode LastRunTime  
-----  
1/1/1     skipped     0x0  
1/1/2     skipped     0x0  
1/1/3     skipped     0x0  
1/1/31    skipped     0x0
```

Displaying the output when fastboot is disabled:

```
switch# show selftest interface  
Name      Status      ErrorCode      LastRunTime  
-----  
1/1/12    passed      0x0            2018-02-16 18:15:53  
1/1/47    passed      0x0            2018-02-16 18:15:53  
1/1/15    passed      0x0            2018-02-16 18:15:53  
  
switch# show selftest interface 1/1/1  
Name      Status      ErrorCode      LastRunTime  
-----  
1/1/1     passed      0x0            2018-02-16 18:15:53
```

Testing to register read/write:



---

This test is run irrespective of fastboot being enabled or disabled.

---

```
switch# show selftest  
Name      Id      Status      ErrorCode LastRunTime  
-----  
LineModule 1/1    passed      0x0        2018-02-16 18:15:53
```

## Command History

### Release

### Modification

---

10.07 or earlier

---

--

## Command Information

| <b>Platforms</b> | <b>Command context</b> | <b>Authority</b>                                                                                                                                                       |
|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All platforms    | Manager (#)            | Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only. |



Device zeroization lets you remove all user files from flash storage, including solid-state drives (SSDs). User files cannot be retrieved after the zeroization is complete.



---

Zeroization can occur in both AOS-CX and Service OS. This section covers zeroization and AOS-CX. For information about zeroization and Support OS, see [erase zeroize](#).

---

Zeroization preserves the primary and secondary software images on the SSD. Zeroization also preserves manufacturing information.

The sensitive user files stored on an SSD or SPI flash/EEPROM storage or both include:

- Switch configurations.
- System generated private keys.
- User installed private keys.
- Admin/operator password files.



---

For more information on password requirements, see *Password requirements* in the *Security Guide*.

---

## Zeroization commands

### erase all zeroize

```
erase all zeroize
```

#### Description

Restores the switch to its factory default configuration. You will be prompted before the procedure starts. Once complete, the switch will restart from the primary image with factory default settings.



---

Back up all data before running this command as all configuration settings will be lost.

---

#### Example

Restoring the switch to factory default configuration:

```
switch# erase all zeroize
This will securely erase all customer data and reset the switch
to factory defaults. This will initiate a reboot and render the
switch unavailable until the zeroization is complete.
This should take several minutes to one hour to complete.
Continue (y/n)? y
The system is going down for zeroization.

...
```

```

##### Preparing for zeroization #####

##### Storage zeroization #####
##### WARNING: DO NOT POWER OFF UNTIL #####
##### ZEROIZATION IS COMPLETE #####
##### This should take several minutes #####
##### to one hour to complete #####

##### Restoring files #####

...

We'd like to keep you up to date about:
 * Software feature updates
 * New product announcements
 * Special events
Please register your products now at: https://asp.arubanetworks.com

switch login: admin
Password:

Please configure the 'admin' user account password.
Enter new password: *****
Confirm new password: *****

```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | Manager (#)     | Administrators or local user group members with execution rights for this command. |

The terminal monitor is used to display selective logs dynamically on the VTYSH session. When the terminal monitor feature is enabled on the switch, it displays only the live or active logs. These logs are displayed on the SSH session or console session. If required, you can enable the terminal monitoring on multiple sessions.

It is important to monitor the logs dynamically while debugging, so that you can co-relate the issues. The logs can be filtered by type (event or debug), severity, or keyword. The terminal monitor runs in synchronous mode, where the user enters any command, the log display pauses until the command execution is complete. This ensures that the logs will not appear in between other CLI outputs or while the user is typing.



---

Terminal monitoring is not persistent in the SSH session. If the SSH session is terminated, the terminal monitor is no longer valid. However, logging console is persistent and is added to the switch configuration, so it will persist between telnet sessions.

---

## Terminal monitor commands

### logging console {notify | severity | filter}

```
logging console{notify <event|debug|all> | severity <level> | filter keyword}
```

```
no logging console
```

#### Description

Enables the logging console feature in the console session. It display all debug log or event log or both debug and event log messages. Monitoring can be filtered with the severity options or with the help of keywords. Enabling terminal monitor without options displays both debug and event log with a severity error. This command is persistent across reboot.

The `no` form of this command disables the terminal monitor configuration.

| Parameter                                   | Description                                                                                                                                                                                                                                                                   |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>notify &lt;event debug all&gt;</code> | Specifies the type of log notification. <ul style="list-style-type: none"><li>▪ <b>Event:</b> Displays the event log messages. (Default)</li><li>▪ <b>Debug:</b> Displays the debug log messages.</li><li>▪ <b>All:</b> Displays both event and debug log messages.</li></ul> |
| <code>severity &lt;level&gt;</code>         | Specifies the severity level for the logs. The different severity levels are emergency, critical, error, warning, notice, information (default), alert, and debug (shows all severities).                                                                                     |
| <code>filter &lt;keyword&gt;</code>         | Specifies the filter by applying keyword for the logs.                                                                                                                                                                                                                        |

#### Authority

Administrators or local user group members with execution rights for this command.

## Examples

Configuring console logging in the console session:

```
switch(config)# logging console
Terminal-monitor is enabled successfully

switch(config)# logging console notify all
Terminal-monitor is enabled successfully

switch(config)# logging console notify event severity info
Terminal-monitor is enabled successfully

switch(config)# logging console filter lldp
Terminal-monitor is enabled successfully
```

## Command History

| Release | Modification        |
|---------|---------------------|
| 10.08   | Feature introduced. |

## Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | config          | Administrators or local user group members with execution rights for this command. |

## show terminal-monitor

```
show terminal-monitor
```

### Description

Shows whether the terminal monitoring is enabled or disabled.



This command will not show any information about console logging.

## Examples

Displaying terminal monitor when enabled:

```
switch# show terminal-monitor

Terminal-monitor is enabled
-----
Notify      | Severity  | Filter
-----
event       | debug     | lldp
-----
```

Displaying terminal monitor when disabled:

```
switch# show terminal-monitor
Terminal-monitor is disabled
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | Manager (#)     | Administrators or local user group members with execution rights for this command. |

## terminal-monitor {notify | severity | filter}

```
terminal-monitor {notify <event|debug|all> | severity <level> | filter <keyword>}
```

```
no terminal-monitor
```

## Description

Enables and saves the terminal monitor feature in the switch configuration. It displays all debug log or event log or both debug and event log messages. Terminal monitoring can be filtered with the severity options or with the help of keywords. Enabling terminal monitor without options displays both debug and event log with a severity error.

The `no` form of this command removes the terminal monitor feature from the switch configuration and the command will not persist.

| Parameter                                   | Description                                                                                                                                                                                                                                                                   |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>notify &lt;event debug all&gt;</code> | Specifies the type of log notification. <ul style="list-style-type: none"><li>▪ <b>Event:</b> Displays the event log messages. (Default)</li><li>▪ <b>Debug:</b> Displays the debug log messages.</li><li>▪ <b>All:</b> Displays both event and debug log messages.</li></ul> |
| <code>severity &lt;level&gt;</code>         | Specifies the severity level for the logs. The different severity levels are emergency, critical, error, warning, notice, information (default), alert, and debug (shows all severities).                                                                                     |
| <code>filter &lt;keyword&gt;</code>         | Specifies the filter by applying keyword for the logs.                                                                                                                                                                                                                        |

## Authority

Administrators or local user group members with execution rights for this command.

## Examples

Enabling terminal monitor:

```
switch# terminal-monitor
Terminal-monitor is enabled successfully

switch# terminal-monitor notify all
Terminal-monitor is enabled successfully

switch# terminal-monitor notify event severity info
Terminal-monitor is enabled successfully

switch# terminal-monitor filter lldp
Terminal-monitor is enabled successfully
```

## Command History

| Release          | Modification |
|------------------|--------------|
| 10.07 or earlier | --           |

## Command Information

| Platforms     | Command context | Authority                                                                          |
|---------------|-----------------|------------------------------------------------------------------------------------|
| All platforms | Manager (#)     | Administrators or local user group members with execution rights for this command. |

The following section describes symptoms, causes and corrective actions for 401 or 404 errors.

## HTTP 404 error when accessing the switch URL

### Symptom

The switch is operational and you are using the correct URL for the switch, but attempts to access the REST API or Web UI result in an HTTP 404 "Page not found" error.

### Cause

REST API access is not enabled on the VRF that corresponds to the access port you are using. For example, you are attempting to access the REST API or Web UI from the management (OOBM) port, and access is not enabled on the `mgmt` VRF.

### Action

Use the `https-server vrf` command to enable REST API access on the specified VRF.

For example:

```
switch(config)# https-server vrf mgmt
```

## HTTP 401 error "Login failed: session limit reached"

### Symptom

A REST request or Web UI login attempt returns response code 401 and the response body contains the following text string:

```
Login failed: session limit reached
```

### Cause

A user attempted to log into the REST API or the Web UI, but that user already has the maximum number of concurrent sessions running.

### Action

1. Log out from one of the existing sessions.  
Browsers share a single session cookie across multiple tabs or even windows. However, scripts that POST to the login resource and later do not POST to the logout resource can easily create the maximum number of concurrent sessions.
2. If the session cookie is lost and it is not possible to log out of the session, then wait for the session idle time limit to expire.

When the session idle timeout expires, the session is terminated automatically.

3. If it is required to stop all HTTPS sessions on the switch instead of waiting for the session idle time limit to expire, you can stop all HTTPS sessions using the `https-server session close all` command.

This command stops and starts the `hpe-restd` service, so using this command affects all existing REST sessions, Web UI sessions, and real-time notification subscriptions.



## Accessing HPE Aruba Networking Support

|                                             |                                                                                                                                                                                      |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HPE Aruba Networking Support Services       | <a href="https://www.arubanetworks.com/support-services/">https://www.arubanetworks.com/support-services/</a>                                                                        |
| AOS-CX Switch Software Documentation Portal | <a href="https://www.arubanetworks.com/techdocs/AOS-CX/help_portal/Content/home.htm">https://www.arubanetworks.com/techdocs/AOS-CX/help_portal/Content/home.htm</a>                  |
| HPE Aruba Networking Support Portal         | <a href="https://networkingsupport.hpe.com/home">https://networkingsupport.hpe.com/home</a>                                                                                          |
| North America telephone                     | 1-800-943-4526 (US & Canada Toll-Free Number)<br>+1-408-754-1200 (Primary - Toll Number)<br>+1-650-385-6582 (Backup - Toll Number - Use only when all other numbers are not working) |
| International telephone                     | <a href="https://www.arubanetworks.com/support-services/contact-support/">https://www.arubanetworks.com/support-services/contact-support/</a>                                        |

Be sure to collect the following information before contacting Support:

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

### Other useful sites

Other websites that can be used to find information:

|                                           |                                                                                                                                                                                                                       |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HPE Aruba Networking Developer Hub        | <a href="https://developer.arubanetworks.com/hpe-aruba-networking-aoscx/docs/about">https://developer.arubanetworks.com/hpe-aruba-networking-aoscx/docs/about</a>                                                     |
| Airheads social forums and Knowledge Base | <a href="https://community.arubanetworks.com/">https://community.arubanetworks.com/</a>                                                                                                                               |
| AOS-CX Software Technical Update          | Videos on new features introduced in this release:<br><a href="https://www.youtube.com/playlist?list=PLsYGHuNuBZcbWPEjjHuVMqP-Q_UL3CskS">https://www.youtube.com/playlist?list=PLsYGHuNuBZcbWPEjjHuVMqP-Q_UL3CskS</a> |

---

channel on  
YouTube.

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HPE Aruba  
Networking  
Hardware  
Documentation  
and Translations  
Portal <https://www.arubanetworks.com/techdocs/hardware/DocumentationPortal/Content/home.htm>

---

HPE Aruba  
Networking  
software <https://networkingsupport.hpe.com/downloads>

---

Software  
licensing and  
Feature Packs <https://licensemanagement.hpe.com/>

---

End-of-Life  
information <https://www.arubanetworks.com/support-services/end-of-life/>

---

## Accessing Updates

You can access updates from the Aruba Support Portal or the HPE My Networking Website.

### Aruba Support Portal

<https://asp.arubanetworks.com/downloads>

If you are unable to find your product in the Aruba Support Portal, you may need to search My Networking, where older networking products can be found:

### My Networking

<https://www.hpe.com/networking/support>

To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

<https://support.hpe.com/portal/site/hpsc/aae/home/>

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.

Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.

To subscribe to eNewsletters and alerts:

<https://asp.arubanetworks.com/notifications/subscriptions> (requires an active Aruba Support Portal (ASP) account to manage subscriptions). Security notices are viewable without an ASP account.

## Warranty Information

To view warranty information for your product, go to <https://www.arubanetworks.com/support-services/product-warranties/>.

## Regulatory Information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at <https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>

### Additional regulatory information

Aruba is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements, environmental data (company programs, product recycling, energy efficiency), and safety information and compliance data, (RoHS and WEEE). For more information, see <https://www.arubanetworks.com/company/about-us/environmental-citizenship/>.

## Documentation Feedback

Aruba is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback ([docsfeedback-switching@hpe.com](mailto:docsfeedback-switching@hpe.com)). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.