



Telemetry, Monitoring, and Debuggability

Table of contents

Logging	3
Link Diagnostic Per Port	28
Event Notifications	41
Commands	63
Management Information Bases (MIBs)	82

- Logging
- Link Diagnostic Per Port
- Event Notifications
- Statistics and Alarms
- Management Information Bases (MIBs)

Logging

Monitor

To print logging events to the terminal, set the modules or events you wish to print to the terminal. For example, run: o-

```
switch (config) # logging monitor events notice
switch (config) # logging monitor sx-sdk warning
```

These commands print system events in severity “notice”, and “sx-sdk” module notifications in severity “warning” to the screen. For example, in case of interface-down event, the following gets printed to the screen:

```
switch (config) #
Wed Jul 10 11:30:42 2013: Interface IB1/17 changed state to DOWN
Wed Jul 10 11:30:43 2013: Interface IB1/18 changed state to DOWN
```

To see a list of the events, refer to [“Supported Event Notifications and MIB Mapping”](#).

Remote Logging

To configure remote syslog to send syslog messages to a remote syslog server:

1. Set remote syslog server.

```
switch (config) # logging <IP address/hostname>
```

2. (Optional) Set the destination port of the remote host.

```
switch (config) # logging <IP address/hostname> port <port>
```

3. (Optional) Filter log messages according to an input regex.

```
switch (config) # logging <IP address/hostname> filter  
<"include"/"exclude"> <regex>
```

4. Set the minimum severity of the log level to info.

```
switch (config) # logging <IP address/hostname> trap info
```

5. Override the log levels on a per-class basis.

```
switch (config) # logging <IP address/hostname> trap override  
class <class name> priority <level>
```

Logging Protocol

A feature that provides the ability to choose the protocol to use for sending syslog messages to a remote host: UDP (default) or TCP. See "[logging_protocol](#)" command.

Logging Commands

logging

	<pre>logging <IPv4 address/IPv6 address/hostname> no logging <IPv4 address/IPv6 address/hostname></pre> <p>Sends log messages to the remote host specified by its IP or hostname.</p> <p>The no form of the command stops sending log messages to the remote host specified by its IP or hostname.</p>
--	--

Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.1.1000
Role	admin
Example	switch (config) # logging 1.1.1.1 switch (config) # no logging 1.1.1.1
Related Commands	
Notes	This command is configurable. If “configuration write” is executed, the remote host will still receive messages after reload.

logging port

	logging <syslog IPv4 address/IPv6 address/hostname> port <destination-port> no logging <syslog IPv4 address/IPv6 address/hostname> port Configures remote server destination port for log messages. The no form of the command resets the remote log port to its default value.	
Syntax Description	destination-port	Range: 1-65535
	Hostname	Max 64 characters
Default	514 (UDP)	
Configuration Mode	config	
History	3.6.2002 3.8.1000—Updated command syntax	
Example	switch (config) # logging 10.0.0.1 port 105	
Related Commands	logging <syslog IPv4 address/IPv6 address/hostname> trap	

logging trap

	<p>logging <syslog IPv4 address/IPv6 address/hostname> [trap {<log-level> override class <class> priority <log-level>}]</p> <p>no logging <syslog IPv4 address/IPv6 address/hostname> [trap {<log-level> override class <class> priority <log-level>}]</p> <p>Enables (by setting the syslog IPv4 address/IPv6 address/hostname) sending logging messages, with ability to filter the logging messages according to their classes.</p> <p>The no form of the command stops sending messages to the remote syslog server.</p>	
Syntax Description	syslog IPv4 address/IPv6 address/hostname	syslog IPv4 address/IPv6 address/hostname of the remote syslog server Hostname is limited to 64 characters
	log-level	<ul style="list-style-type: none"> • none—disables the logging locally and remotely • 0 - emerg—system is unusable (emergency) • 1 - alert—alert notification, action must be taken immediately • 2 - crit—critical condition • 3 - err—error condition • 4 - warning—warning condition • 5 - notice—normal, but significant condition • 6 - info—informational condition • 7 - debug—debug level messages
	class	<p>Sets or removes a per-class override on the logging level. All classes which do not have an override set will use the global logging level set with “logging local <log level>”. Classes that do have an override will do as the override specifies. If “none” is specified for the log level, the software will not log anything from this class.</p> <p>Classes available:</p> <ul style="list-style-type: none"> • iss-modules—protocol stack • mgmt-back—system management back-end • mgmt-core—system management core • mgmt-front—system management front-end

		<ul style="list-style-type: none"> • mlx-daemons—management daemons • sx-sdk—switch SDK
Default	Remote logging is disabled	
Configuration Mode	config	
History	3.6.2002 3.8.1000—Updated command syntax	
Example	switch (config) # logging local info	
Related Commands	show logging logging local override logging <syslog IPv4 address/IPv6 address/hostname> port	
Notes		

logging debug-files

	<p>logging debug-files {delete {current oldest} rotation {criteria force max-num} update {<number> current} upload <log-file> <upload URL>}</p> <p>no logging debug-files rotation criteria</p> <p>Configures settings for debug log files.</p> <p>The "logging debug-files rotation criteria" command removes the debug rotation criteria configuration.</p>	
Syntax Description	delete {current oldest}	Deletes certain debug-log files. <ul style="list-style-type: none"> • current—deletes the current active debug-log file • oldest—deletes some of the oldest debug-log files
	rotation {criteria {frequency {daily weekly monthly} size <size> size-pct <percentage>	Configures automatic rotation of debug-logging files. <ul style="list-style-type: none"> • criteria—sets how the system decides when to rotate debug files <ul style="list-style-type: none"> ◦ frequency—rotate log files on a fixed time-based schedule ◦ size—rotate log files when they pass a size threshold in megabytes ◦ size-pct—rotate logs when they surpass a specified percentage of disk

	>} force max-num}	<ul style="list-style-type: none"> forces—forces an immediate rotation of the log files max-num—specifies the maximum number of old log files to keep
	update {<number> current}	<p>Uploads a local debug-log file to a remote host.</p> <ul style="list-style-type: none"> current—uploads log file “messages” to a remote host number—uploads compressed log file “debug.<number>.gz” to a remote host. Range is 1-10.
	upload	Uploads debug log file to a remote host
	log-file	Possible values: 1-7, or current
	upload URL	Supported formats: HTTP, HTTPS, FTP, TFTP, SCP and SFTP (e.g.: scp://username[:password]@hostname/path/filename)
Default	N/A	
Configuration Mode	config	
History	3.3.4150 3.9.0900: Added "no logging debug-files rotation criteria" command	
Example	switch (config) # logging debug-files delete current	
Related Commands		
Notes		

logging events enable

	<p>logging events {cpu-rate-limiters interfaces protocols} enable no logging events {cpu-rate-limiters interfaces protocols what-just-happened-packets} enable Activate event tracking for a certain group. The no form of the command deactivates event tracking for a certain group.</p>	
Syntax Description	cpu-rate-limiters	Logical groups with specified set of counters

	interfaces protocols what-just-happened-packets
Default	N/A
Configuration Mode	config
History	3.6.6000 3.9.0900: Added note
Example	switch (config) # logging events interfaces enable
Related Commands	
Notes	Increase in the enabled events groups will generate a log message of the form: Jan 8 14:15:24 switch statsd[4404]: [statsd.NOTICE]: (StatsLog) Interface Eth1/9: 398 0598 packets dropped due to Rx invalid tag discards packets Jan 8 14:15:24 switch statsd[4404]: [statsd.NOTICE]: (StatsLog) Interface Eth1/9: 398 0599 packets dropped due to Rx discard packets by vlan filter Jan 8 14:42:44 switch statsd[4404]: [statsd.NOTICE]: (StatsLog) cpu-rate-limiter DISCARD_LAYERS_2_3: 7767087 packets dropped by CPU rate-limiter

logging events error-threshold

	logging events {interfaces protocols} error-threshold <events> no logging events {interfaces protocols} error-threshold <events> Configures number of events after which the system begins to generate events to the log file. The no form of the command resets this parameter to its default value.	
Syntax Description	interfaces	Sets threshold for interface related events
	protocols	Sets threshold for protocol related events
	events	Number of events after which the system begins to generate events to the log file. Range: 0-4294967295.
Default	cpu-rate-limiters - 1 event interfaces - 10 events protocols - 2 events	

Configuration Mode	config
History	3.6.6000
Example	switch (config) # logging events interfaces error-threshold 45
Related Commands	
Notes	

logging events interval

	<p>logging events {interfaces protocols} interval <seconds> no logging events {interfaces protocols} interval <seconds> Configures interval in seconds between each sampling of counters in event type. The no form of the command resets this parameter to its default value.</p>	
Syntax Description	interfaces protocols	Logical groups with specified set of counters Default: interfaces—5 minutes protocols—1 minute
	seconds	Time between sampling. Range is different for each event type: <ul style="list-style-type: none"> • interfaces—10-3600 • protocols—10-3600
Default	N/A	
Configuration Mode	config	
History	3.6.6000	
Example	switch (config) # logging events interfaces interval 120	
Related Commands		
Notes		

logging events rate-limit

	<p>logging events [interfaces protocols] rate-limit {short medium long} [count window]</p> <p>no logging events [interfaces protocols] rate-limit [short medium long] [count <number> window <seconds>]</p> <p>Configures the number of allowed events per time window, and that window's duration.</p> <p>The no form of the command resets these parameters to their default values.</p>	
Syntax Description	interfaces protocols	Logical groups with specified set of counters
	rate-limit	Three configurable periods: short, medium, and long
	count	Number of allowed events per time window
	window	Window of time in seconds for the rate limit period
Default	<p>For "interfaces"</p> <p>Short window: event count—5 window duration—1 hour</p> <p>Medium window: event count—50 window duration—1 day</p> <p>Long window: event count—350 window duration—7 days</p>	<p>For "protocols"</p> <p>Short window: event count—10 window duration—1 hour</p> <p>Medium window: event count—100 window duration—1 day</p> <p>Long window: event count—600 window duration—7 days</p>
Configuration Mode	config	
History	3.6.6000	
Example	switch (config) # logging events interfaces interval 120	
Related Commands		
Notes	The goal of this command is to restrict the number of events in the log. To achieve this end, it is possible to specify the allowed number	

(parameter “count”) of messages per period of time (parameter “window”).

logging fields

	<p>logging fields seconds {enable fractional-digits <f-digit> whole-digits <w-digit>} no logging fields seconds {enable fractional-digits <f-digit> whole-digits <w-digit>}</p> <p>Specifies whether to include an additional field in each log message that shows the number of seconds since the Epoch or not. The no form of the command disallows including an additional field in each log message that shows the number of seconds since the Epoch.</p>	
Syntax Description	enable	Specifies whether to include an additional field in each log message that shows the number of seconds since the Epoch or not.
	f-digit	The fractional-digits parameter controls the number of digits to the right of the decimal point. Truncation is done from the right. Possible values are: 1, 2, 3, or 6.
	w-digit	The whole-digits parameter controls the number of digits to the left of the decimal point. Truncation is done from the left. Except for the year, all of these digits are redundant with syslog's own date and time. Possible values: 1, 6, or all.
Default	Disabled	
Configuration Mode	config	
History	3.1.0000	
Example	<pre>switch (config) # logging fields seconds enable switch (config) # logging fields seconds whole-digits 1</pre>	
Related Commands	show logging	
Notes	This is independent of the standard syslog date and time at the beginning of each message in the format of “July 15 18:00:00”.	

Aside from indicating the year at full precision, its main purpose is to provide subsecond precision.

logging files delete

	logging files delete {current oldest [<number of files>]}	
	Deletes the current or oldest log files.	
Syntax Description	current	Deletes current log file
	oldest	Deletes oldest log file
	number of files	Sets the number of files to be deleted
Default	CLI commands and audit message are set to notice logging level	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # logging files delete current	
Related Commands	show logging show log files	
Notes		

logging files rotation

	logging files rotation {criteria {frequency <freq> size <size-mb> size-pct <size-percentage>} force max-number <number-of-files>}	
	no logging files rotation criteria	
	Sets the rotation criteria of the logging files. The no form of the command removes the rotation criteria configuration.	
Syntax Description	freq	Sets rotation criteria according to time. Possible options are: <ul style="list-style-type: none"> • Daily • Weekly

	<ul style="list-style-type: none"> Monthly
size-mb	Sets rotation criteria according to size in megabytes Range: 1-9999 Default: 20MB
size-percentage	Sets rotation criteria according to size in percentage of the partition where the logging files are kept in. The percentage given is truncated to three decimal points (thousandths of a percent).
force	Forces an immediate rotation of the log files. This does not affect the schedule of auto-rotation if it was done based on time: the next automatic rotation will still occur at the same time for which it was previously scheduled. Naturally, if the auto-rotation was based on size, this will delay it somewhat as it reduces the size of the active log file to zero.
number-of-files	The number of log files will be kept. If the number of log files ever exceeds this number (either at rotation time, or when this setting is lowered), the system will delete as many files as necessary to bring it down to this number, starting with the oldest.
Default	10 files are kept by default with rotation criteria of 5% of the log partition size
Configuration Mode	config
History	3.1.0000 3.9.0900: <ul style="list-style-type: none"> Added the command "no logging files rotation criteria" Changed default value size from 19.07 MB to 20 MB
Example	switch (config) # logging files rotation criteria size-pct 6
Related Commands	show logging show log files
Notes	

logging files upload

	logging files upload {current <file-number>} <url> Uploads a log file to a remote host.	
Syntax Description	current	The current log file. The current log file will have the name “messages” if you do not specify a new name for it in the upload URL.
	file-number	An archived log file. The archived log file will have the name “messages<n>.gz” (while “n” is the file number) if you do not specify a new name for it in the upload URL. The file will be compressed with gzip.
	url	Uploads URL path. Supported formats: FTP, TFTP, SCP, and SFTP. For example: scp://username[:password]@hostname/path/filename.
Default	10 files are kept by default with rotation criteria of 5% of the log partition size	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # logging files upload 1 scp://admin@scpserver	
Related Commands	show logging show log files	
Notes		

logging filter include

	logging <IP address\hostname> filter include <regex> Sends only log messages that match the input regex to a remote host specified by its IP or hostname.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	config	
History	3.8.2000	

Role	admin
Example	switch (config) # logging 1.1.1.1 filter include ERROR
Related Commands	login no logging
Notes	This command is configurable. If “configuration write” is executed, the remote host will still receive filtered messages after reload.

logging filter exclude

	logging <IP address\hostname> filter exclude <regex> Sends only log messages that do not match the input regex to a remote host specified by its IP or hostname.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.8.2000
Role	admin
Example	switch (config) # logging 1.1.1.1 filter exclude ERROR
Related Commands	login no logging
Notes	This command is configurable. If “configuration write” is executed, the remote host will still receive filtered messages after reload.

no logging filter

	no logging <IP address\hostname> filter Sends unfiltered log messages to the configured remote host.
Syntax Description	N/A
Default	N/A

Configuration Mode	config
History	3.8.2000
Role	admin
Example	switch (config) # no logging 1.1.1.1 filter
Related Commands	login no logging
Notes	This command is configurable. If “configuration write” is executed, the remote host will still receive filtered messages after reload.

logging format

	logging format {standard welf [fw-name <hostname>]} no logging format {standard welf [fw-name <hostname>]} Sets the format of the logging messages. The no form of the command resets the format to its default.	
Syntax Description	standard	Standard format
	welf	WebTrends Enhanced Log file (WELF) format
	hostname	Specifies the firewall hostname that should be associated with each message logged in WELF format. If no firewall name is set, the hostname is used by default. Hostname is limited to 64 characters.
Default	standard	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # logging format standard	
Related Commands	show logging	
Notes		

logging level

	logging level {cli commands <log-level> audit mgmt <log-level>} Sets the severity level at which CLI commands or the management audit message that the user executes are logged. This includes auditing of both configuration changes and actions.	
Syntax Description	cli commands	Sets the severity level at which CLI commands which the user executes are logged
	audit mgmt	Sets the severity level at which all network management audit messages are logged
	log-level	<ul style="list-style-type: none"> • none—disables the logging locally and remotely • 0 - emerg—system is unusable (emergency) • 1 - alert—alert notification, action must be taken immediately • 2 - crit—critical condition • 3 - err—error condition • 4 - warning—warning condition • 5 - notice—normal, but significant condition • 6 - info—informational condition • 7 - debug—debug level messages
Default	CLI commands and audit message are set to notice logging level	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # logging level cli commands info	
Related Commands	show logging	
Notes		

logging local override

	logging local override [class <class> priority <log-level>] no logging local override [class <class> priority <log-level>] Enables class-specific overrides to the local log level. The no form of the command disables all class-specific overrides to the local log level without deleting them from the configuration, but disables them so that the logging level for all classes is determined solely by the global setting.
--	--

Syntax Description	override	Enables class-specific overrides to the local log level.
	class	<p>Sets or removes a per-class override on the logging level. All classes which do not have an override set will use the global logging level set with “logging local <log level>”. Classes that do have an override will do as the override specifies. If “none” is specified for the log level, the software will not log anything from this class.</p> <p>Classes available:</p> <ul style="list-style-type: none"> • debug-module—debug module functionality • protocol-stack—protocol stack modules functionality • mgmt-back—system management back-end components • mgmt-core—system management core • mgmt-front—system management front-end components • mlx-daemons—management daemons • sx-sdk—switch SDK
	log-level	<ul style="list-style-type: none"> • none—disables the logging locally and remotely • 0 - emerg—system is unusable (emergency) • 1 - alert—alert notification, action must be taken immediately • 2 - crit—critical condition • 3 - err—error condition • 4 - warning—warning condition • 5 - notice—normal, but significant condition • 6 - info—informational condition • 7 - debug—debug level messages
Default	Override is disabled	
Configuration Mode	config	
History	3.1.0000 3.3.4150: Added debug-module class and changed iss-modules to protocol-stack	
Example	switch (config) # logging local override class mgmt-front priority warning	
Related Commands	show logging logging local	

Notes	
-------	--

logging monitor

	logging monitor <facility> <priority-level> no logging monitor <facility> <priority-level> Sets monitor log facility and level to print to the terminal. The no form of the command disables printing logs of facilities to the terminal.	
Syntax Description	facility	<ul style="list-style-type: none"> • mgmt-front • mgmt-back • mgmt-core • events • sx-sdk • mlnx-daemons • iss-modules
	priority-level	<ul style="list-style-type: none"> • none • emerg • alert • crit • err • warning • notice • info • debug
Default	no logging monitor	
Configuration Mode	config	
History	3.3.4000	
Example	switch (config) # logging monitor events notice	
Related Commands		
Notes		

logging protocol

	logging <IP address\hostname> protocol [tcp udp] no logging <IP address\hostname> protocol Sends log messages to specified host with the chosen protocol (TCP or UDP). The no form of the command sets the protocol for sending log messages to a remote host to the default (UDP).	
Syntax Description	tcp	Sets protocol to TCP
	udp	Sets protocol to UDP
Default	UDP	
Configuration Mode	Configure terminal	
History	3.8.2100	
Role	Admin	
Example	switch (config) # logging 1.1.1.1 protocol tcp switch (config) # no logging 1.1.1.1 protocol	
Related Commands		
Notes	This command is configurable, so if “configuration write” is executed then after reboot the remote host will still receive messages with the configured protocol.	

logging receive

	logging receive no logging receive Enables receiving logging messages from a remote host. The no form of the command disables the option of receiving logging messages from a remote host.	
Syntax Description	N/A	
Default	Receiving logging is disabled	
Configuration Mode	config	
History	3.1.0000	

Example	switch (config) # logging receive
Related Commands	show logging logging local logging local override
Notes	<ul style="list-style-type: none"> • This does not log to the console TTY port • In-band management should be enabled in order to open a channel from the host to the CPU • If enabled, only log messages matching or exceeding the minimum severity specified with the “logging local” command will be logged, regardless of what is sent from the remote host

logging mac masking

	logging mac masking no logging mac masking Enables MAC address masking in logs. The no form of the command disables MAC address masking.
Syntax Description	N/A
Default	Enabled
Configuration Mode	config
History	3.9.0900
Example	switch (config) # logging mac masking
Related Commands	show logging
Notes	If enabled, the first 2 bytes of MAC address output log will be masked. For example, 00:12:34:56:78:9a will be displayed as **:**:34:56:78:9a.

show log

	show log [continuous files [<file-number>]] [[not] matching <reg-exp>]
--	--

	Displays the log file with optional filter criteria.	
Syntax Description	continues	Displays the last few lines of the current log file and then continues to display new lines as they come in until the user hits Ctrl+C, similar to LINUX “tail” utility
	files	Displays the list of log files
	<file-number>	Displays an archived log file, where the number may range from 1 up to the number of archived log files available
	[not] matching <reg-exp>	The file is piped through a LINUX “grep” utility to only include lines either matching, or not matching, the provided regular expression
Default	N/A	
Configuration Mode	Any command mode	
History	3.1.0000 3.3.4402: Updated example and added note	
Example		
<pre>switch (config) # show log matching "Executing Action" Jul 31 16:11:23 M2100-aj cli[26502]: [cli.NOTICE]: user : Executing command: enable Jul 31 16:11:24 M2100-aj cli[26507]: [cli.NOTICE]: user : Executing command: enable Jul 31 16:11:29 M2100-aj cli[26514]: [cli.NOTICE]: user : Executing command: enable Jul 31 16:11:29 M2100-aj cli[26514]: [cli.NOTICE]: user : Executing command: show license Jul 31 16:11:41 M2100-aj cli[26548]: [cli.NOTICE]: user : Executing command: enable Jul 31 16:11:42 M2100-aj cli[26553]: [cli.NOTICE]: user : Executing command: enable Jul 31 16:11:42 M2100-aj cli[26553]: [cli.NOTICE]: user : Executing command: conf termina</pre>		
Related Commands	logging fields logging files rotation logging level logging local logging receive show logging	
Notes	<ul style="list-style-type: none"> • When using a regular expression containing (OR), the expression should be surrounded by quotes (“<expression>”), otherwise it is parsed as filter (PIPE) command • The command’s output has many of the options as the Linux “less” command. These options allow navigating the log file and perform searches. To see help for different option press “h” after running the “show log” command. 	

show logging

	show logging Displays the logging configurations.
Syntax Description	N/A
Default	N/A
Configuration Mode	Any command mode
History	3.1.0000 3.8.2000: Updated example 3.9.0900: Updated example
Role	Admin
Example	<pre>switch (config) # show logging Local logging level : notice Override for class debug-module : notice Default remote logging level : notice Allow receiving of messages from remote hosts: no Number of archived log files to keep : 10 Log rotation size threshold : 19.07 megabytes Log rotation (debug) size threshold : 19.07 megabytes Log format : standard Subsecond timestamp field : disabled MAC address masking : enabled Levels at which messages are logged: CLI commands : notice Audit messages: notice Remote syslog servers: 1.1.1.1: log level : notice Remote port : 514 Filter [include] regex: err 1.2.2.3: log level : notice Remote port: 33</pre>
Related Commands	logging fields logging files rotation logging level

	logging local logging receive logging <syslog IPv4 address/IPv6 address/hostname>
Notes	

show logging events

	show logging events [interfaces protocols] Displays configuration per selected event group or all.	
Syntax Description	interfaces protocols	Logical groups with specified set of counters
Default	N/A	
Configuration Mode	Any command mode	
History	3.6.6000	
Example	<pre>switch (config) # show logging events interfaces: Admin mode : no Interval : 5 minutes Error threshold: 10 Rate-limit short window: Event count : 5 Window duration: 1 hour Rate-limit medium window: Event count : 50 Window duration: 1 day Rate-limit long window: Event count : 350 Window duration: 7 days protocols: Admin mode : no Interval : 1 minute Error threshold: 2 Rate-limit short window: Event count : 10 Window duration: 1 hour Rate-limit medium window: Event count : 100 Window duration: 1 day Rate-limit long window: Event count : 600</pre>	

	Window duration: 7 days
Related Commands	logging event enable logging event error-threshold logging event interval logging event rate-limit
Notes	

show logging events source-counters

	show logging events [interfaces protocols] source-counters Displays set of counters for sampling.	
Syntax Description	interfaces protocols	Logical groups with specified set of counters
Default	N/A	
Configuration Mode	Any command mode	
History	3.6.6000	
Example	switch (config) # show logging events interfaces source-counters interfaces: Counters: Rx discard packets, Rx error packets, Rx fcs errors, Rx undersize packets, Rx oversize packets, Rx unknown control opcode, Rx symbol errors, Rx discard packets by Storm Control, Tx discard packets, Tx error packets, Tx hoq discard packets	
Related Commands	logging event enable logging event error-threshold logging event interval logging event rate-limit	
Notes		

show logging port

	show logging port Displays the port logging configurations.
Syntax	N/A

Description	
Default	N/A
Configuration Mode	Any command mode
History	3.1.0000 3.8.1000: Updated example
Example	switch (config) # show logging Local logging level: notice Override for class debug-module: notice Default remote logging level: notice Remote syslog receiver: 1.2.3.4 (log level: notice) Remote port: 514
Related Commands	logging port
Notes	

Link Diagnostic Per Port

When debugging a system, it is important to be able to quickly identify the root of a problem. The Diagnostic commands enables an insight into the physical layer components where the user is able to see information such as a cable status (plugged/unplugged) or if Auto-Negotiation has failed.

PHY Firmware Indication (0—1023)

Below is a list of possible output messages:

Monitor _opcode	Detailed Description	Detailed Mitigation
0—No issue observed		Wait 5 seconds and check again. If the message continues, check peer side.
1—Port is close by command	PAOS down command, also used form port shutdown, for example.	Check who sent the command to close the port and reopen it.
2—AN failure	Both sides did not agree on speed/FEC or DME is missing.	Debug Steps: <ol style="list-style-type: none">1. Check Tx power and Rx power from both sides.<ol style="list-style-type: none">1. Low Tx power: Check transceiver issue.2. Low Rx power: Check Tx power from peer side+ clean fiber and transceiver (both ends).2. Check both sides are configured correctly:<ol style="list-style-type: none">1. Same speeds and FECs or that AN is fully enabled.3. For more than that, collect data from both sides of the link and escalate.

Monitor _opcode	Detailed Description	Detailed Mitigation
3—AN failure	Ack not received.	Not relevant for NDR.
4—AN failure	Next-page exchange failed.	
5—Link training failure.	Frame lock not acquired.	
6—Link training failure.	Link inhibit timeout.	
7—Link training failure.	Link partner did not set receiver ready.	
8—Link training failure.	Tuning didn't completed.	
9—Logical mismatch between link partners	Did not acquire block lock.	<ol style="list-style-type: none"> 1. Check both sides are configured correctly: <ol style="list-style-type: none"> 1. Same speeds and FECs or that AN is fully enabled. 2. If the issue repeats, collect data from both sides and escalate.
10—Logical mismatch between link partners	Did not acquire AM lock (NO FEC).	
11—Logical mismatch between link partners	Did not get align_status. AN is done but the signal is not locked. Very rare.	
12—Logical mismatch between link partners	FC FEC is not locked.	
13—Logical mismatch between link partners	RS FEC is not locked.	
14—Remote fault received		Wait 5 seconds and check again. If the message continues, check peer side.
15—Bad signal integrity	Low Raw BER. Please notice to have it running minimum time	<p>The link is up, but with low Raw BER.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Wait to test again after some time.

Monitor _opcode	Detailed Description	Detailed Mitigation
	before checking.	<ol style="list-style-type: none"> 2. Cleaning the fiber from both sides + the transceivers. 3. Look at the Tx power and Rx Power. <ol style="list-style-type: none"> 1. Low Tx power: Check transceiver issue. 2. Low Rx power: Check Tx power from peer side+ clean fiber and transceiver (both ends). 4. Collect SNR (electrical and optical) from both sides. <ol style="list-style-type: none"> 1. Available in mlxlink -m and other tools. 5. In case the link stays with low BER, test with PRBS. <ol style="list-style-type: none"> 1. Please see the steps in the mlxlink help flag or in the attached excel. 6. Collet mlxlink and mstdumps from both sides and share with us. <ol style="list-style-type: none"> 1. In case of successful PRBS results: we will debug the firmware. 2. In case of low BER PRBS results: we will debug the SerDes. 3. In case specific lane does not lock, it might be transceiver, NIC, firmware, or SerDes.
16—Cable compliance code mismatch (protocol mismatch between cable and port)		<ol style="list-style-type: none"> 1. Need to see the port speed is configured as expected with the cable. 2. Need to see if the cable is the right one for the port if it is as expected, please collect data.
17—Bad signal integrity		Not relevant for NDR.
18, 20—Internal error		
19—Internal error		

Monitor _opcode	Detailed Description	Detailed Mitigation
20—Stamping of non-NVIDIA Cables/Modules		Replace the cable with an NVIDIA cable.
21—Down by PortInfo MAD		Need to check who sent the command to close the port and reopen it.
22—Internal error		Not relevant for the field.
23—Internal error	Calibration failure.	<ol style="list-style-type: none"> 1. Collect data from both sides. 2. Please run power cycle and check if the issue repeats. Send us the informatio and data.
24—EDR speed is not allowed due to cable stamping: EDR stamping	Cable is invalid.	Replace the cable with an NVIDIA cable.
25—FDR10 speed is not allowed due to cable stamping: FDR10 stamping		
26—Port is closed due to cable stamping: Ethernet_compliance_code_zero		
27—Port is closed due to cable stamping: 56GE stamping		
28—Port is closed due to cable stamping: non-NVIDIA QSFP28		
29—Port is closed due to cable stamping: non-NVIDIA SFP28		
30—Port is closed, no backplane enabled speed over backplane channel		Check the port is configured correctly: same speeds, width and FECs or that AN is fully enabled.
31—Port is closed, no passive protocol enabled over passive copper channel		

Monitor _opcode	Detailed Description	Detailed Mitigation
32—Port is closed, no active protocol enabled over active channel		
33—Port width is does not match the port speed enabled		
34—Local Speed degradation		<p>The link is up, but with lower speed than expected.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Wait to test again after some time. 2. Cleaning the fiber from both sides + the transceivers. 3. Look at the Tx power and Rx Power. <ol style="list-style-type: none"> 1. Low Tx power: Check transceiver issue. 2. Low Rx power: Check Tx power from peer side+ clean fiber and transceiver (both ends). 4. .Collect SNR (electrical and optical) from both sides. <ol style="list-style-type: none"> 1. Available in mlxlink -m and other tools. 5. In case the link stays with low BER, test with PRBS. <ol style="list-style-type: none"> 1. Please see the steps in the mlxlink help flag or in the attached excel. 6. Collet mlxlink and mstdumps and share with us. <ol style="list-style-type: none"> 1. In case of successful PRBS results: We will debug the firmware. 2. In case of low BER PRBS results: we will debug the SerDes. 3. In case specific lane doesn't lock, well it gets in interesting and might be transceiver, NIC, firmware or SerDes.

Monitor _opcode	Detailed Description	Detailed Mitigation
35—Remote Speed degradation		Review remote side status.
36—No Partner detected during force mode. 37—Partial link indication during force mode.		Debug steps: <ol style="list-style-type: none"> 1. Check Tx power and Rx power from both sides. <ol style="list-style-type: none"> 1. Low Tx power: Check transceiver issue. 2. Low Rx power: Check Tx power from peer side+ clean fiber and transceiver (both ends). 2. Check both sides are configured correctly: <ol style="list-style-type: none"> 1. Same speeds and FECs or that AN is fully enabled. 3. For more then that, please collect data and escalate.
38—AN failure	FEC mismatch during override.	<ol style="list-style-type: none"> 1. Check both sides are configured correctly: <ol style="list-style-type: none"> 1. Same speeds and FECs or that AN is fully enabled. 2. For more then that, please collect data and escalate.
39—AN failure	No HCD.	
40	N/A	Not relevant for NDR.
41—Port is closed, module can't be set to the enabled rate		
42—Bad SI, cable is configured to non optimal rate		
43—No Partner Detected in Force Mode and Fast Link Up		Not relevant for NDR.
44-47	N/A	
48—Bad signal integrity		

Monitor _opcode	Detailed Description	Detailed Mitigation
49—Bad signal integrity		
50—Internal error		
51—HST speed mismatch		<ol style="list-style-type: none"> 1. Check both sides are configured correctly: <ol style="list-style-type: none"> 1. Same speeds and FECs or that AN is fully enabled. 2. For more then that, please collect data and escalate.
52—Bad signal integrity		<p>The link is up, but with low Raw BER. Steps:</p> <ol style="list-style-type: none"> 1) Wait to test again after some time 2) Cleaning the fiber from both sides + the transceivers (including reinsertions) 3) Look at the Tx power and Rx Power <ol style="list-style-type: none"> a. Low Tx power: Check transceiver issue b. Low Rx power: Check Tx power from peer side+ clean fiber and transceiver (both ends) 4) Collect SNR (electrical and optical) from both sides <ol style="list-style-type: none"> a. Available in mlxlink -m and other tools 5) In case the link stays with low BER, test with PRBS. <ol style="list-style-type: none"> a. Please see the steps in the mlxlink help flag or in the attached excel 6) Collet mlxlink and mstdumps and share with us <ol style="list-style-type: none"> a. In case of successful PRBS results: We will debug the firmware b. In case of low BER PRBS results: we will debug the SerDes c. In case specific lane doesn't lock, well it gets in interesting and might be transceiver, NIC,firmware or SerDes.
53—Link failure due to MCB at link up		Wait for 10 seconds, and if the message is reread then share inforamtion from both sides and toggle the link.
54—PLR didn't get Rx good non sync cell		

Monitor _opcode	Detailed Description	Detailed Mitigation
55—PSI fatal error		
56— module_lanes_frequency_not_synced		Not relevant for NDR
57—signal not detected 59—Did not get module conf done	Power detection in the SerDes is not detected.	<ol style="list-style-type: none"> 1. Wait to test again after some time. 2. Cleaning the fiber from both sides + the transceivers (including reinsertions). 3. Look at the Tx power and Rx Power. <ol style="list-style-type: none"> 1. Low Tx power: Check transceiver issue. 2. Low Rx power: Check Tx power from peer side+ clean fiber and transceiver (both ends). 4. In case the link stays with low BER, test with PRBS. <ol style="list-style-type: none"> 1. Please see the steps in the mlxlink help flag or in the attached excel. 5. Collet mlxlink and mstdumps and share with us. <ol style="list-style-type: none"> 1. In case of successful PRBS results: We will debug the firmware. 2. In case of low BER PRBS results: we will debug the SerDes. 3. In case specific lane does not lock, well it gets in interesting and might be transceiver, NIC, firmware or SerDes.
58	N/A	Not relevant for NDR.
128—Troubleshooting in process		Wait 3 seconds and run the command again.
1023—Info not available		Wait for 10 seconds, and if the message is reread then share inforamtion from both sides and run power cycle.

Monitor _opcode	Detailed Description	Detailed Mitigation
1024—Cable is unplugged	No physical transceiver detected on cage.	Plug transceiver. Please notice that no one run command simulating unplugged transceiver.
1025—Long Range for non Mellanox cable/module .	No support for long range none NVIDIA cables.	Replace the cable with NVIDIA cable.
1026—Bus stuck (I2C Data or clock shorted)	Received failure on the I ² C EEPROM communication line.	Transceiver reset (Disable/enable), if the issue continues, please collect information and data and then run power cycle.
1027—Bad/unsupported EEPROM	Failed to read EEPROM from transceiver or transceiver id is not recognized.	Please test with another approved transceiver. If the issue continues, please collect data and share.
1028—Part number list	Transceiver is not permitted by vendor list.	Replace the cable with cable from the supported list.
1029—Unsupported cable.	SFP transceiver is not supported.	
1030—Module temperature shutdown	Transceiver temperature exceeded allowed threshold.	Please check the cable temperature and cool the environment if it is indeed too hot.
1031—Shorted cable	Receive over current on the transceiver.	Bad transceiver, please test with a different transceiver.
1032—Power budget exceeded	Board power budget have exceeded.	Review supported power by the transceiver and board INI.
1033—Management forced down the port	Module shutdown by	Please review the server commands.

Monitor _opcode	Detailed Description	Detailed Mitigation
	server command.	
1034—Module is disabled by command	Tranceiver admin status is disabled.	Enable admin status.
1036—Module's PMD type is not enabled (see PMTPS).	Tranceiver type not supported.	Replace tranceiver.
1037	N/A	Not relevant for NDR.
1038	N/A	
1039	N/A	
1040—pcie system power slot Exceeded		
1041	N/A	
1042—Module state machine fault		
1043—Module's stamping speed degeneration		
1044—Module's stamping speed degeneration	HDR speed is not supported.	Replace the cable with an NVIDIA cable.
1045—Module's stamping speed degeneration	EDR speed is not supported.	
1046—Module's stamping speed degeneration	FDR10 speed is not supported.	
1047—Modules DataPath FSM fault	Failed to configure speed (application) by tranceiver.	Wait for 10 seconds, and if the message is reread then share inforamtion from both sides and run power cycle.
1048—Modules DataPath FSM fault		
Core/Driver (2048—3071):		
2048—MPR Violation (Under 64 bytes between two starts).		Wait for 10 seconds, and if the message is reread then share inforamtion from both sides and run power cycle .

Link Diagnostic Commands

show interfaces ib link-diagnostics

	show interfaces ib [device/port] link-diagnostics Displays a specific InfiniBand module/port or all InfiniBand ports.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.6.4000
Example	<pre>switch (config) # show interfaces ib link-diagnostics ----- Interface Code Status ----- IB1/1 0 The port is Active. IB1/2 0 The port is Active. IB1/3 1024 Cable unplugged IB1/4 1024 Cable unplugged IB1/5 1024 Cable unplugged IB1/6 1024 Cable unplugged IB1/7 1024 Cable unplugged IB1/8 1024 Cable unplugged IB1/9 1024 Cable unplugged IB1/10 1024 Cable unplugged IB1/11 1024 Cable unplugged IB1/12 1024 Cable unplugged IB1/13 1024 Cable unplugged IB1/14 1024 Cable unplugged IB1/15 1024 Cable unplugged IB1/16 1024 Cable unplugged IB1/17 1024 Cable unplugged IB1/18 1024 Cable unplugged IB1/19 1024 Cable unplugged IB1/20 1024 Cable unplugged IB1/21 1024 Cable unplugged IB1/22 1024 Cable unplugged IB1/23 1024 Cable unplugged IB1/24 1024 Cable unplugged IB1/25 1024 Cable unplugged IB1/26 1024 Cable unplugged IB1/27 1024 Cable unplugged IB1/28 1024 Cable unplugged IB1/29 1024 Cable unplugged</pre>

	IB1/30	1024	Cable unplugged
	IB1/31	1024	Cable unplugged
	IB1/32	1024	Cable unplugged
	IB1/33	1024	Cable unplugged
	IB1/34	1024	Cable unplugged
	IB1/35	1	The port is closed by command.
	IB1/36	2	Auto-Negotiation failure..
Related Commands			
Notes			

show interfaces ib internal leaf link-diagnostics

	show interfaces ib internal leaf <module/port> link-diagnostics Displays a specific InfiniBand internal leaf module/port.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.6.4000
Example	<pre>switch (config) # show interfaces ib internal leaf 1 link-diagnostics ----- Interface Code Status ----- IB1/1/19 0 No issue was observed IB1/1/20 0 No issue was observed IB1/1/21 0 No issue was observed IB1/1/22 0 No issue was observed IB1/1/23 0 No issue was observed IB1/1/24 0 No issue was observed IB1/1/25 0 No issue was observed IB1/1/26 0 No issue was observed IB1/1/27 0 No issue was observed IB1/1/28 0 No issue was observed IB1/1/29 0 No issue was observed IB1/1/30 0 No issue was observed</pre>
Related Commands	
Notes	

show interfaces ib internal spine link-diagnostics

	show interfaces ib internal spine <module/port> link-diagnostics Displays a specific InfiniBand internal spine module/port.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.6.4000
Example	<pre>switch (config) # show interfaces ib internal spine 3/1/1 link-diagnostics ----- Interface Code Status ----- IB3/1/1 0 No issue was observed</pre>
Related Commands	
Notes	

Event Notifications

The OS features a variety of supported events. Events are printed in the system log file and can, optionally, be sent to the system administrator via email, SNMP trap or directly prompted to the terminal.

Supported Event Notifications and MIB Mapping

The following table presents the supported events and maps them to their relevant MIB OID.

Event Name	Event Description	MIB OID	Comments
asic-chip-down	ASIC (chip) down	Mellanox-EFM-MIB: asicChipDown	Not supported
cpu-util-high	CPU utilization has risen too high	Mellanox-EFM-MIB: cpuUtilHigh	N/A
disk-space-low	File system free space has fallen too low	Mellanox-EFM-MIB: diskSpaceLow	N/A
health-module-status	Health module status changed	Mellanox-EFM-MIB: systemHealthStatus	N/A
insufficient-fans	Insufficient amount of fans in system	Mellanox-EFM-MIB: insufficientFans	N/A
insufficient-fans-recover	Insufficient amount of fans in system recovered	Mellanox-EFM-MIB: insufficientFansRecover	N/A
insufficient-power	Insufficient power supply	Mellanox-EFM-MIB: insufficientPower	N/A

Event Name	Event Description	MIB OID	Comments
interface-down	An interface's link state has changed to DOWN	RFC1213: linkdown (SNMPv1)	Supported for InfiniBand interfaces for 1U and blade systems
interface-up	An interface's link state has changed to UP	RFC1213: linkup (SNMPv1)	Supported for InfiniBand interfaces for 1U and blade systems
internal-bus-error	Internal bus (I2C) error	Mellanox-EFM-MIB: internalBusError	N/A
internal-link-speed-mismatch	There is a mismatch in the speeds of the internal links between spine and leaf modules	Mellanox-EFM-MIB: internalSpeedMismatch	Supported only for modular switches
liveness-failure	A process in the system is detected as hung	Not implemented	N/A
low-power	Low power supply	Mellanox-EFM-MIB: lowPower	N/A
low-power-recover	Low power supply recover	Mellanox-EFM-MIB: lowPowerRecover	N/A
paging-high	Paging activity has risen too high	N/A	Not supported
power-redundancy-mismatch	Power redundancy mismatch	Mellanox-EFM-MIB: powerRedundancyMismatch	Supported only for modular switches
process-crash	A process in the system has crashed	Mellanox-EFM-MIB: procCrash	N/A
process-exit	A process in the system unexpectedly exited	Mellanox-EFM-MIB: procUnexpectedExit	N/A
send-test	Send a test notification	testTrap	Run the CLI command "snmp-server notify send-test"

Event Name	Event Description	MIB OID	Comments
snmp-authtrap	An SNMPv3 request has failed authentication	Not implemented	N/A
temperature-too-high	Temperature is too high	Mellanox-EFM-MIB: asicOverTemp	N/A
unexpected-shutdown	Unexpected system shutdown	Mellanox-EFM-MIB: unexpectedShutdown	N/A
cli-line-executed			
disk-io-high			
entity-state-change			
expected-shutdown			
memusage-high			
netusage-high			
sm-restart			
sm-start			
sm-stop			
unexpected-cluster-join			
unexpected-cluster-leave			
unexpected-cluster-size			
user-login			
user-logout			

SNMP Trap Notification

To set SNMP notification see [Configuring SNMP Notifications \(Traps or Informs\)](#) section.

Terminal Notifications

To print events to the terminal, set the events you wish to print to the terminal. Run:

```
switch (config) # logging monitor events notice
```

This command prints system events in the severity “notice” to the screen. For example, in case of interface-down event, the following gets printed to the screen.

```
switch (config) #  
Wed Jul 10 11:30:42 2022: Interface 1/17 changed state to DOWN  
Wed Jul 10 11:30:43 2022: Interface 1/18 changed state to DOWN  
switch (config) #
```

Email Notifications

To configure the OS to send you emails for all configured events and failures:

1. Set your mailhub to the IP address to be your mail client’s server – for example, Microsoft Outlook exchange server.

```
switch (config) # email mailhub <IP address>
```

2. Add your email address for notifications. Run:

```
switch (config) # email notify recipient <email address>
```

3. Configure the system to send notifications for a specific event. Run:

```
switch (config) # email notify event <event name>
```

4. Show the list of events for which an email is sent. Run:

```
switch (config) # show email events
Failure events for which emails will be sent:
  process-crash: A process in the system has crashed
  unexpected-shutdown: Unexpected system shutdown

Informational events for which emails will be sent:
  asic-chip-down: ASIC (Chip) Down
  cpu-util-high: CPU utilization has risen too high
  cpu-util-ok: CPU utilization has fallen back to normal
  levels
  disk-io-high: Disk I/O per second has risen too high
  disk-io-ok: Disk I/O per second has fallen back to
  acceptable levels
  disk-space-low: Filesystem free space has fallen too low
  ...
```

5. Have the system send you a test email. Run:

```
switch (config) # email send-test

The last command should generate the following email:
-----Original Message-----
From: Admin User [mailto:do-not-reply@switch.]
Sent: Sunday, May 01, 2011 11:17 AM
To: <name>
Subject: System event on switch: Test email for event
notification
```

```

==== System information:
Hostname: switch

Version:  MLNX-OS 3.11.1954-007 #1-dev 2023-10-18 15:21:05

Date:      2023/10/19 16:34:04

Uptime:    1h 45m 8.730s

This is a test email.

==== Done.

```

Command Event Notifications

email autosupport enable

	<p>email autosupport enable no email autosupport enable Sends automatic support notifications via email. The no form of the command stops sending automatic support notifications via email.</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.2.3000
Example	switch (config) # email autosupport enable
Related Commands	
Notes	

email autosupport event

	<p>email autosupport event <event> no email autosupport event Specifies for which events to send auto-support notification emails. The no form of the command resets auto-support email security mode to its default.</p>	
Syntax Description	event	<ul style="list-style-type: none"> • process-crash – a process has crashed • process-exit – a process unexpectedly exited • liveness-failure – a process iss detected as hung • cpu-util-high – CPU utilization has risen too high • cpu-util-ok – CPU utilization has fallen back to normal levels • paging-high – paging activity has risen too high • paging-ok – paging activity has fallen back to normal levels • disk-space-low – filesystem free space has fallen too low • disk-space-ok – filesystem free space is back in the normal range • memusage-high – memory usage has risen too high • memusage-ok – memory usage has fallen back to acceptable levels • netusage-high – network utilization has risen too high • netusage-ok – network utilization has fallen back to acceptable levels • disk-io-high – disk I/O per second has risen too high • disk-io-ok – disk I/O per second has fallen back to acceptable levels • unexpected-cluster-join – node has unexpectedly joined the cluster • unexpected-cluster-leave – node has unexpectedly left the cluster • unexpected-cluster-size – the number of nodes in the cluster is unexpected • unexpected-shutdown – unexpected system shutdown • interface-up – an interface’s link state has changed to up

		<ul style="list-style-type: none"> • interface-down – an interface's link state has changed to down • user-login – a user has logged into the system • user-logout – a user has logged out of the system • health-module-status – health module status • temperature-too-high – temperature has risen too high • low-power – low power supply • low-power-recover – low power supply recover • insufficient-power – insufficient power supply • power-redundancy-mismatch – power redundancy mismatch • insufficient-fans – insufficient amount of fans in system • insufficient-fans-recover – insufficient amount of fans in system recovered • asic-chip-down – ASIC (chip) down • internal-bus-error – internal bus (I2C) error • internal-link-speed-mismatch – internal links speed mismatch
Default	N/A	
Configuration Mode	config	
History	3.2.3000	
Example	switch (config) # email autosupport event process-crash	
Related Commands		
Notes		

email autosupport ssl mode

	<pre>email autosupport ssl mode {none tls tls-none} no email autosupport ssl mode</pre> <p>Configures type of security to use for auto-support email. The no form of the command resets auto-support email security mode to its default.</p>
--	--

Syntax Description	none	Does not use TLS to secure auto-support email.
	tls	Uses TLS over the default server port to secure auto-support email and does not send an email if TLS fails.
	tls-none	Attempts TLS over the default server port to secure auto-support email, and falls back on plaintext if this fails.
Default	tls-none	
Configuration Mode	config	
History	3.2.3000	
Example	switch (config) # email autosupport ssl mode tls	
Related Commands		
Notes		

email autosupport ssl cert-verify

	<pre>email autosupport ssl cert-verify no email autosupport ssl cert-verify</pre> <p>Verifies server certificates. The no form of the command does not verify server certificates.</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.2.3000
Example	switch (config) # email autosupport ssl cert-verify
Related Commands	
Notes	

email autosupport ssl ca-list

	<p>email autosupport ssl ca-list {<ca-list-name> default_ca_list none} no email autosupport ssl ca-list Configures supplemental CA certificates for verification of server certificates. The no form of the command removes supplemental CA certificate list.</p>	
Syntax Description	default_ca_list	Default supplemental CA certificate list
	none	No supplemental list (uses built-in list only)
Default	default_ca_list	
Configuration Mode	config	
History	3.2.3000	
Example	switch (config) # email autosupport ssl ca-list default_ca_list	
Related Commands		
Notes		

email dead-letter

	<p>email dead-letter {cleanup max-age <duration> enable} no email dead-letter Configures settings for saving undeliverable emails. The no form of the command disables sending of emails to vendor auto-support upon certain failures.</p>	
Syntax Description	duration	Example: “5d4h3m2s” for 5 days, 4 hours, 3 minutes, 2 seconds
	enable	Saves dead-letter files for undeliverable emails
Default	Save dead letter is enabled The default duration is 14 days	
Configuration Mode	config	

History	3.1.0000
Example	switch (config) # email dead-letter enable
Related Commands	show email
Notes	

email domain

	<p>email domain <hostname-or-ip-address> no email domain Sets the domain name from which the emails appear to come (provided that the return address is not already fully-qualified). This is used in conjunction with the system hostname to form the full name of the host from which the email appears to come. The no form of the command clears email domain override.</p>	
Syntax Description	hostname-or-ip-address	Hostname or IP address of email domain
Default	No email domain	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # email domain my_domain	
Related Commands	show emails	
Notes		

email mailhub

	<p>email mailhub <hostname-or-ip-address> no email mailhub Sets the mail relay to be used to send notification emails. The no form of the command clears the mail relay to be used to send notification emails.</p>	
--	--	--

Syntax Description	hostname-or-ip-address	Hostname or IP address
Default	N/A	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # email mailhub 10.0.8.11	
Related Commands	show email [events]	
Notes		

email autosupport mailhub

	<p>email autosupport mailhub <hostname-or-ip-address> no email autosupport mailhub Sets the mail relay to be used for sending autosupport notification emails. The no form of the command clears the mail relay to be used for sending autosupport notification emails.</p>	
Syntax Description	<hostname-or-ip-address>	The mail hub hostname or IP address
Default	N/A	
Configuration Mode	config	
History	3.7.1000	
Example	switch (config) # email autosupport mailhub 10.10.10.1	
Related Commands	show email	
Notes		

email autosupport recipient

	email autosupport recipient <email-addr> no email autosupport recipient Sets the recipient for autosupport emails. The no form of the command clears the configured autosupport recipient.	
Syntax Description	email-addr	The autosupport recipient email address
Default	N/A	
Configuration Mode	config	
History	3.7.1000	
Example	switch (config) # email autosupport recipient user@example.com	
Related Commands	show email	
Notes		

email mailhub-port

	email mailhub-port <port number> no email mailhub-port Sets the mail relay port to be used to send notification emails. The no form of the command resets the port to its default.	
Syntax Description	hostname-or-ip-address	Port number
Default	25	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # email mailhub-port 125	
Related	show email	

Commands	
Notes	

email notify event

	<p>email notify event <event> no email notify event <event> Enables sending email notifications for the specified event type. The no form of the command disables sending email notifications for the specified event type.</p>	
Syntax Description	event	<p>Available event names:</p> <ul style="list-style-type: none"> • process-crash – a process has crashed • process-exit – a process unexpectedly exited • liveness-failure – a process iss detected as hung • cpu-util-high – CPU utilization has risen too high • cpu-util-ok – CPU utilization has fallen back to normal levels • paging-high – paging activity has risen too high • paging-ok – paging activity has fallen back to normal levels • disk-space-low – filesystem free space has fallen too low • disk-space-ok – filesystem free space is back in the normal range • memusage-high – memory usage has risen too high • memusage-ok – memory usage has fallen back to acceptable levels • netusage-high – network utilization has risen too high • netusage-ok – network utilization has fallen back to acceptable levels • disk-io-high – disk I/O per second has risen too high • disk-io-ok – disk I/O per second has fallen back to acceptable levels • unexpected-cluster-join – node has unexpectedly joined the cluster • unexpected-cluster-leave – node has unexpectedly left the cluster

		<ul style="list-style-type: none"> • unexpected-cluster-size – the number of nodes in the cluster is unexpected • unexpected-shutdown – unexpected system shutdown • interface-up – an interface’s link state has changed to up • interface-down – an interface's link state has changed to down • user-login – a user has logged into the system • user-logout – a user has logged out of the system • health-module-status – health module status • temperature-too-high – temperature has risen too high • low-power – low power supply • low-power-recover – low power supply recover • insufficient-power – insufficient power supply • power-redundancy-mismatch – power redundancy mismatch • insufficient-fans – insufficient amount of fans in system • insufficient-fans-recover – insufficient amount of fans in system recovered • asic-chip-down – ASIC (chip) down • internal-bus-error – internal bus (I2C) error • internal-link-speed-mismatch – internal links speed mismatch
Default	No events are enabled	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # email notify event process-crash	
Related Commands	email autosupport event show email show email events	
Notes	This does not affect auto-support emails. Auto-support can be disabled overall, but if it is enabled, all auto-support events are sent as emails.	

email notify recipient

	email notify recipient <email-addr> [class {info failure} detail] no email notify recipient <email-addr> [class {info failure} detail] Adds an email address from the list of addresses to which to send email notifications of events. The no form of the command removes an email address from the list of addresses to which to send email notifications of events.	
Syntax Description	email-addr	Email address of intended recipient.
	class	Specifies which types of events are sent to this recipient.
	info	Sends informational events to this recipient.
	failure	Sends failure events to this recipient.
	detail	Sends detailed event emails to this recipient.
Default	N/A	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # email notify recipient user2@autosupport.mydomain.com	
Related Commands	show email	
Notes		

email return-addr

	email return-addr <username> no email domain Sets the username or fully-qualified return address from which email notifications are sent. <ul style="list-style-type: none">• If the string provided contains an “@” character, it is considered to be fully-qualified and used as-is.• Otherwise, it is considered to be just the username, and we append “@<hostname>.<domain>”. The default is “do-not-
--	---

	<p>reply”, but this can be changed to “admin” or whatnot in case something along the line does not like fictitious addresses.</p> <p>The no form of the command resets this attribute to its default.</p>	
Syntax Description	username	Username
Default	N/A	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # email return-addr user1	
Related Commands	show email	
Notes		

email return-host

	<p>email return-host no email return-host</p> <p>Includes the hostname in the return address for emails. The no form of the command does not include the hostname in the return address for emails.</p>	
Syntax Description	N/A	
Default	No return host	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # no email return-host	
Related Commands	show email	
Notes	This only takes effect if the return address does not contain an “@” character	

email send-test

	email send-test Sends test-email to all configured event and failure recipients.
Syntax Description	N/A
Default	No return host
Configuration Mode	config
History	3.1.0000
Example	switch (config) # email send-test
Related Commands	show email [events]
Notes	

email ssl mode

	email ssl mode {none tls tls-none} no email ssl mode Sets the security mode(s) to try for sending email. The no form of the command resets the email SSL mode to its default.	
Syntax Description	none	No security mode, operates in plaintext
	tls	Attempts to use TLS on the regular mailhub port, with STARTTLS. If this fails, it gives up.
	tls-none	Attempts to use TLS on the regular mailhub port, with STARTTLS. If this fails, it falls back on plaintext.
Default	default-cert	
Configuration Mode	config	
History	3.2.3000	
Example	switch (config) # email ssl mode tls-none	
Related	show email	

Commands	
Notes	

email ssl cert-verify

	<p>email ssl cert-verify no email ssl cert-verify</p> <p>Enables verification of SSL/TLS server certificates for email. The no form of the command disables verification of SSL/TLS server certificates for email.</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.2.3000
Example	switch (config) # email ssl cert-verify
Related Commands	show email
Notes	This command has no impact unless TLS is used.

email ssl ca-list

	<p>email ssl ca-list {<ca-list-name> default-ca-list none} no email ssl ca-list</p> <p>Specifies the list of supplemental certificates of authority (CA) from the certificate configuration database that is to be used for verification of server certificates when sending email using TLS, if any. The no form of the command uses no list of supplemental certificates.</p>	
Syntax Description	ca-list-name	Specifies CA list name
	default-ca-list	Uses default supplemental CA certificate list

	none	Uses no list of supplemental certificates
Default	default-ca-list	
Configuration Mode	config	
History	3.2.3000	
Example	switch (config) # email ssl ca-list none	
Related Commands	show email	
Notes	This command has no impact unless TLS is used, and certificate verification is enabled.	

show email

	show email	Displays email configuration or events for which email should be sent upon.
Syntax Description	N/A	
Default	N/A	
Configuration Mode	Any command mode	
History	3.1.0000	
Example	<pre>switch (config) # show email Mail hub: 10.0.8.70 Mail hub port: 25 Domain override: Return address: do-not-reply Include hostname in return address: yes Current reply address: do-not-reply@<hostname> Security mode: tls-none Verify server cert: yes Supplemental CA list: default-ca-list Dead letter settings: Save dead.letter files: yes Dead letter max age: 14 days Email notification recipients: No recipients configured. Autosupport emails</pre>	

	Enabled: no Recipient: Mail hub: Security mode: tls-none Verify server cert: yes Supplemental CA list: default-ca-list
Related Commands	
Notes	

show email events

	show email events Displays list of events for which notification emails are sent.
Syntax Description	N/A
Default	N/A
Configuration Mode	Any command mode
History	3.1.0000
Example	<pre>switch (config) # show email events Failure events for which emails will be sent: expected-shutdown: Expected system shutdown process-crash: A process in the system has crashed unexpected-shutdown: Unexpected system shutdown Informational events for which emails will be sent: asic-chip-down: ASIC (Chip) Down cpu-util-high: CPU utilization has risen too high cpu-util-ok: CPU utilization has fallen back to normal levels disk-io-high: Disk I/O per second has risen too high disk-io-ok: Disk I/O per second has fallen back to acceptable levels disk-space-low: Filesystem free space has fallen too low disk-space-ok: Filesystem free space is back in the normal range health-module-status: Health module Status insufficient-fans: Insufficient amount of fans in system insufficient-fans-recover: Insufficient amount of fans in system recovered insufficient-power: Insufficient power supply internal-bus-error: Internal bus (I2C) Error internal-link-speed-mismatch: Internal links speed mismatch liveness-failure: A process in the system was detected as hung low-power: Low power supply low-power-recover: Low power supply Recover</pre>

	<p>memusage-high: Memory usage has risen too high memusage-ok: Memory usage has fallen back to acceptable levels netusage-high: Network utilization has risen too high netusage-ok: Network utilization has fallen back to acceptable levels paging-high: Paging activity has risen too high paging-ok: Paging activity has fallen back to normal levels power-redundancy-mismatch: Power redundancy mismatch process-exit: A process in the system unexpectedly exited sm-restart: Subnet Manager restarted for parameter change sm-start: Subnet Manager started sm-stop: Subnet Manager stopped temperature-too-high: Temperature has risen too high unexpected-cluster-join: A node has unexpectedly joined the cluster unexpected-cluster-leave: A node has unexpectedly left the cluster unexpected-cluster-size: The number of nodes in the cluster is unexpected</p> <p>All events for which autosupport emails will be sent: liveness-failure: A process in the system was detected as hung process-crash: A process in the system has crashed</p>
Related Commands	
Notes	

Commands

stats alarm clear

	stats alarm <alarm ID> clear Clears alarm state.	
Syntax Description	alarm ID	Alarms supported by the system, for example: <ul style="list-style-type: none">• cpu_util_indiv—average CPU utilization too high: percent utilization• disk_io—operating System Disk I/O per second too high: kilobytes per second• fs_mnt—free filesystem space too low: percent of disk space free• intf_util—network utilization too high: bytes per second• memory_pct_used—too much memory in use: percent of physical memory used• paging—paging activity too high: page faults• temperature—temperature is too high: degrees
Default	N/A	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats alarm cpu_util_indiv clear	
Related Commands	show stats alarm	
Notes		

stats alarm enable

	stats alarm <alarm-id> enable no stats alarm <alarm-id> enable Enables the alarm.
--	---

	The no form of the command disables the alarm, notifications will not be received.	
Syntax Description	alarm ID	<p>Alarms supported by the system, for example:</p> <ul style="list-style-type: none"> • <code>cpu_util_indiv</code>—average CPU utilization too high: percent utilization • <code>disk_io</code>—operating System Disk I/O per second too high: kilobytes per second • <code>fs_mnt</code>—free filesystem space too low: percent of disk space free • <code>intf_util</code>—network utilization too high: bytes per second • <code>memory_pct_used</code>—too much memory in use: percent of physical memory used • <code>paging</code>—paging activity too high: page faults • <code>temperature</code>—temperature is too high: degrees
Default	The default is different per alarm-id	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats alarm cpu_util_indiv enable	
Related Commands	show stats alarm	
Notes		

stats alarm event-repeat

	<pre>stats alarm <alarm ID> event-repeat {single while-not-cleared} no stats alarm <alarm ID> event-repeat</pre> <p>Configures repetition of events from this alarm. The no form of this command resets this parameter to its default.</p>	
Syntax Description	alarm ID	<p>Alarms supported by the system, for example:</p> <ul style="list-style-type: none"> • <code>cpu_util_indiv</code>—average CPU utilization too high: percent utilization • <code>disk_io</code>—operating System Disk I/O per second too high: kilobytes per second • <code>fs_mnt</code>—free filesystem space too low: percent of disk space free

		<ul style="list-style-type: none"> • intf_util—network utilization too high: bytes per second • memory_pct_used—too much memory in use: percent of physical memory used • paging—paging activity too high: page faults • temperature—temperature is too high: degrees
	single	Does not repeat events: only sends one event whenever the alarm changes state.
	while-not-cleared	Repeats error events until the alarm clears.
Default	single	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats alarm cpu_util_indiv event-repeat single	
Related Commands	show stats alarm	
Notes		

stats alarm {rising | falling}

	<pre>stats alarm <alarm ID> {rising falling} {clear-threshold error-threshold} <threshold-value></pre> <p>Configure alarms thresholds.</p>
--	--

Syntax Description	alarm ID	Alarms supported by the system, for example: <ul style="list-style-type: none"> • <code>cpu_util_indiv</code>—average CPU utilization too high: percent utilization • <code>disk_io</code>—operating System Disk I/O per second too high: kilobytes per second • <code>fs_mnt</code>—free filesystem space too low: percent of disk space free • <code>intf_util</code>—network utilization too high: bytes per second • <code>memory_pct_used</code>—too much memory in use: percent of physical memory used • <code>paging</code>—paging activity too high: page faults • <code>temperature</code>—temperature is too high: degrees
	falling	Configures alarm for when the statistic falls too low
	rising	Configures alarm for when the statistic rises too high
	error-threshold	Sets threshold to trigger falling or rising alarm
	clear-threshold	Sets threshold to clear falling or rising alarm
	threshold-value	The desired threshold value, different per alarm
Default	Default is different per alarm-id	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats alarm cpu_util_indiv falling clear-threshold 10	
Related Commands	show stats alarm	
Notes	Not all alarms support all four thresholds.	

stats alarm rate-limit

	stats alarm <alarm ID> rate-limit {count <count-type> <count> reset window <window-type> <duration>}
--	--

		Configures alarms rate limit.
Syntax Description	alarm ID	Alarms supported by the system, for example: <ul style="list-style-type: none"> • cpu_util_indiv—average CPU utilization too high: percent utilization • disk_io—operating System Disk I/O per second too high: kilobytes per second • fs_mnt—free filesystem space too low: percent of disk space free • intf_util—network utilization too high: bytes per second • memory_pct_used—too much memory in use: percent of physical memory used • paging—paging activity too high: page faults • temperature—temperature is too high: degrees
	count-type	Long medium, or short count (number of alarms)
	reset	Set the count and window durations to default values for this alarm
	window-type	Long medium, or short count, in seconds
Default	Short window: 5 alarms in 1 hour Medium window: 20 alarms in 1 day Long window: 50 alarms in 7 days	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats alarm paging rate-limit window long 2000	
Related Commands	show stats alarm	
Notes		

stats chd clear

		stats chd <CHD ID> clear Clears CHD counters.
Syntax Description	CHD ID	CHD supported by the system, for example: <ul style="list-style-type: none"> • cpu_util—CPU utilization: percentage of time spent

	<ul style="list-style-type: none"> • <code>cpu_util_ave</code>—CPU utilization average: percentage of time spent • <code>cpu_util_day</code>—CPU utilization average: percentage of time spent • <code>disk_device_io_hour</code>—storage device I/O read/write statistics for the last hour: bytes • <code>disk_io</code>—operating system aggregate disk I/O average (KB/sec) • <code>fs_mnt_day</code>—filesystem system usage average: bytes • <code>fs_mnt_month</code>—filesystem system usage average: bytes • <code>fs_mnt_week</code>—filesystem system usage average: bytes • <code>intf_day</code>—network interface statistics aggregation: bytes • <code>intf_hour</code>—network interface statistics (same as “interface” sample) • <code>intf_util</code>—aggregate network utilization across all interfaces • <code>memory_day</code>—average physical memory usage: bytes • <code>memory_pct</code>—average physical memory usage • <code>paging</code>—paging activity: page faults • <code>paging_day</code>—paging activity: page faults • <code>ib_day</code> • <code>ib_hour</code>
Default	N/A
Configuration Mode	<code>config</code>
History	3.1.0000
Example	<code>switch (config) # stats chd memory_day clear</code>
Related Commands	<code>show stats chd</code>
Notes	

stats chd enable

	<pre>stats chd <chd-id> enable no stats chd <chd-id> enable</pre> <p>Enables the CHD. The no form of the command disables the CHD.</p>
--	--

Syntax Description	chd-id	<p>CHD supported by the system, for example:</p> <ul style="list-style-type: none"> • cpu_util—CPU utilization: percentage of time spent • cpu_util_ave—CPU utilization average: percentage of time spent • cpu_util_day—CPU utilization average: percentage of time spent • disk_device_io_hour—storage device I/O read/write statistics for the last hour: bytes • disk_io—operating system aggregate disk I/O average: KB/sec • fs_mnt_day—filesystem system usage average: bytes • fs_mnt_month—filesystem system usage average: bytes • fs_mnt_week—filesystem system usage average: bytes • intf_day—network interface statistics aggregation: bytes • intf_hour—network interface statistics (same as “interface” sample) • intf_util—aggregate network utilization across all interfaces • memory_day—average physical memory usage: bytes • memory_pct—average physical memory usage • paging—paging activity: page faults • paging_day—paging activity: page faults • ib_day • ib_hour
Default	Enabled	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats chd memory_day enable	
Related Commands	show stats chd	
Notes		

stats chd compute time

	stats chd <CHD ID> compute time {interval range} <number of seconds> Sets parameters for when this CHD is computed.	
Syntax Description	CHD ID	Possible IDs: <ul style="list-style-type: none"> • cpu_util—CPU utilization: percentage of time spent • cpu_util_ave—CPU utilization average: percentage of time spent • cpu_util_day—CPU utilization average: percentage of time spent • disk_device_io_hour—storage device I/O read/write statistics for the last hour: bytes • disk_io—operating system aggregate disk I/O average: KB/sec • fs_mnt_day—filesystem system usage average: bytes • fs_mnt_month—filesystem system usage average: bytes • fs_mnt_week—filesystem system usage average: bytes • intf_day—network interface statistics aggregation: bytes • intf_hour—network interface statistics (same as “interface” sample) • intf_util—aggregate network utilization across all interfaces • memory_day—average physical memory usage: bytes • memory_pct—average physical memory usage • paging—paging activity: page faults • paging_day—paging activity: page faults • ib_day • ib_hour
	interval	Specifies calculation interval (how often to do a new calculation) in number of seconds
	range	Specifies calculation range, in number of seconds

	number of seconds	Number of seconds
Default	Different per CHD	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats chd memory_day compute time interval 120	
Related Commands	show stats chd	
Notes		

stats export

	stats export <format> <sample-id> Exports collected information to a file.	
Syntax Description	memory	Memory utilization
	paging	Paging I/O
	telemetry	Telemetry histogram
	cpu_util	CPU utilization
	power	Power
Default	N/A	
Configuration Mode	config	
History	3.7.1102 3.10.1000: Updated syntax description options	
Example	switch (config) # stats export csv memory	
Related Commands	show stats sample	
Notes		

stats sample clear

	stats sample <sample ID> clear
--	--------------------------------

	Clears sample history.	
Syntax Description	sample ID	<p>Possible sample IDs are:</p> <ul style="list-style-type: none"> • congested • cpu_util—CPU utilization: milliseconds of time spent • disk_device_io—storage device I/O statistics • disk_io—operating system aggregate disk I/O: KB/sec • fan - Fan speed • fs_mnt_bytes—filesystem usage: bytes • fs_mnt_inodes—filesystem usage: inodes • interface—network interface statistics • intf_util—network interface utilization: bytes • memory—system memory utilization: bytes • paging—paging activity: page faults • power—power supply usage • power-consumption • temperature—modules temperature <ul style="list-style-type: none"> • ib
Default	N/A	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats sample temperature clear	
Related Commands	show stats sample	
Notes		

stats sample enable

	<pre>stats sample <sample-id> enable no states sample <sample-id> enable</pre> <p>Enables the sample. The no form of the command disables the sample.</p>	
Syntax Description	sample-id	<p>Possible sample IDs are:</p> <ul style="list-style-type: none"> • congested

		<ul style="list-style-type: none"> • cpu_util—CPU utilization: milliseconds of time spent • disk_device_io—storage device I/O statistics • disk_io—operating system aggregate disk I/O: KB/sec • fan—fan speed • fs_mnt_bytes—filesystem usage: bytes • fs_mnt_inodes—filesystem usage: inodes • interface—network interface statistics • intf_util—network interface utilization: bytes • memory—system memory utilization: bytes • paging—paging activity: page faults • power—power supply usage • power-consumption • temperature—modules temperature <ul style="list-style-type: none"> • ib
Default	Enabled	
Configuration Mode	config	
History	3.1.0000	
Example	switch (config) # stats sample temperature enable	
Related Commands	show stats sample	
Notes		

stats sample interval

	<pre>stats sample <sample-id> interval [<interval>]</pre> <pre>no stats sample <sample-id> interval [<interval>]</pre> <p>Sets the sampling interval between taking of sample records. The no form of the command sets interval to default value.</p>	
Syntax Description	sample-id	<p>Sample name for which report file should be generated.</p> <ul style="list-style-type: none"> • congested • cpu_util—CPU utilization: milliseconds of time spent • disk_device_io—storage device I/O statistics

		<ul style="list-style-type: none"> • disk_io—operating system aggregate disk I/O: KB/sec • fan—fan speed • fs_mnt_bytes—filesystem usage: bytes • fs_mnt_inodes—filesystem usage: inodes • interface—network interface statistics • intf_util—network interface utilization: bytes • memory—system memory utilization: bytes • paging—paging activity: page faults • power—power supply usage • power-consumption • temperature—modules temperature <ul style="list-style-type: none"> • ib
	interval	Measured in seconds. Range: 1 - 86400 (24 hours)
Default	Default for “interface” samples is 60 seconds	
Configuration Mode	config	
History	3.7.1 102	
Example	switch (config) # stats sample interface-ethernet interval 1	
Related Commands	show stats sample	
Notes		

stats sample max-entries

	<pre>stats sample <sample-id> max-entries [<max-entries>]</pre> <pre>no stats sample <sample-id> max-entries [<max-entries>]</pre> <p>Sets number of records to be kept in memory for the counter. The no form of the command resets the value to its default.</p>	
Syntax Description	sample-id	<p>Sample name for which report file should be generated.</p> <ul style="list-style-type: none"> • congested • cpu_util—CPU utilization: milliseconds of time spent • disk_device_io—storage device I/O statistics

		<ul style="list-style-type: none"> • disk_io—operating system aggregate disk I/O: KB/sec • fan—fan speed • fs_mnt_bytes—filesystem usage: bytes • fs_mnt_inodes—filesystem usage: inodes • interface—network interface statistics • intf_util—network interface utilization: bytes • memory—system memory utilization: bytes • paging—paging activity: page faults • power—power supply usage • power-consumption • temperature—modules temperature
	max-entries	Number of records Range: 1-1000
Default	Default “interface” samples is 100 records	
Configuration Mode	config	
History	3.7.1102	
Example	switch (config) # stats sample interface-ethernet max-entries 1000	
Related Commands	show stats sample	
Notes	<ul style="list-style-type: none"> • Setting a new value will delete all sample history. • History does not persist after reboot. 	

stats clear-all

	stats clear-all Clears data for all samples, CHDs, and status for all alarms.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	3.1.0000

Example	switch (config) # stats clear-all
Related Commands	show stats sample
Notes	

show stats alarm

	show stats alarm [<alarm-id> [rate-limit]] Displays status of all alarms or the specified alarm.	
Syntax Description	alarm-id	<p>Available values:</p> <ul style="list-style-type: none"> • cpu_util_indiv—average CPU utilization too high: percent utilization • disk_io—operating System Disk I/O per second too high: kilobytes per second • fs_mnt—free filesystem space too low: percent of disk space free • intf_util—network utilization too high: bytes per second • memory_pct_used—too much memory in use: percent of physical memory used • paging—paging activity too high: page faults • temperature—temperature is too high: degrees
	rate-limit	Displays rate limit parameters.
Default	N/A	
Configuration Mode	Any command mode	
History	3.1.0000	
Example	<pre>switch (config) # show stats alarm Alarm cpu_util_indiv (Average CPU utilization too high): ok Alarm disk_io (Operating System Disk I/O per second too high): (disabled) Alarm fs_mnt (Free filesystem space too low): ok Alarm intf_util (Network utilization too high): (disabled) Alarm memory_pct_used (Too much memory in use): (disabled) Alarm paging (Paging activity too high): ok Alarm temperature (Temperature is too high): ok</pre>	
Related Commands	stats alarm	

Notes	
-------	--

show stats chd

	show stats chd [<chd-id>] Displays configuration of all statistics CHDs.	
Syntax Description	chd-id	Available values: <ul style="list-style-type: none"> • <code>cpu_util_indiv</code>—average CPU utilization too high: percent utilization • <code>disk_io</code>—operating System Disk I/O per second too high: kilobytes per second • <code>fs_mnt</code>—free filesystem space too low: percent of disk space free • <code>intf_util</code>—network utilization too high: bytes per second • <code>memory_pct_used</code>—too much memory in use: percent of physical memory used • <code>paging</code>—paging activity too high: page faults • <code>temperature</code>—temperature is too high: degrees
Default	N/A	
Configuration Mode	Any command mode	
History	3.1.0000	
Example	<pre>switch (config) # show stats chd disk_device_io_hour CHD "disk_device_io_hour" (Storage device I/O read/write statistics for the last hour: bytes): Enabled: yes Source dataset: sample "disk_device_io" Computation basis: data points Interval: 1 data point(s) Range: 1 data point(s)</pre>	
Related Commands	stats chd	
Notes		

show stats cpu

	show stats cpu
--	----------------

	<p>Displays some basic stats about CPU utilization:</p> <ul style="list-style-type: none"> • the current level • the peak over the past hour • the average over the past hour
Syntax Description	N/A
Default	N/A
Configuration Mode	Any command mode
History	3.1.0000
Example	<pre>switch (config) # show stats cpu CPU 0 Utilization: 6% Peak Utilization Last Hour: 16% at 2012/02/28 08:47:32 Avg. Utilization Last Hour: 8%</pre>
Related Commands	
Notes	

show stats sample

	<p>show stats sample [<sample-id>] Displays sampling interval for all samples, or the specified one.</p>	
Syntax Description	sample-id	<p>Sample name for which report file should be generated.</p> <ul style="list-style-type: none"> • congested • cpu_util—CPU utilization: milliseconds of time spent • disk_device_io—storage device I/O statistics • disk_io—operating system aggregate disk I/O: KB/sec • fan—fan speed • fs_mnt_bytes—filesystem usage: bytes • fs_mnt_inodes—filesystem usage: inodes • interface—network interface statistics • intf_util—network interface utilization: bytes • memory—system memory utilization: bytes • paging—paging activity: page faults

		<ul style="list-style-type: none"> • power—power supply usage • power-consumption • temperature—modules temperature • ib
Default	N/A	
Configuration Mode	Any command mode	
History	3.1.0000	
Example	<pre>switch (config) # show stats sample fan Sample "fan" (Fan speed): Enabled: yes Sampling interval: 1 minute 11 seconds</pre>	
Related Commands		
Notes		

show stats sample data

	<pre>show stats sample <sample-id> data [interface {ethernet port-channel mlag-port-channel} <device/port> [counter <counter-name>]] [group name <group-name> [counter <counter-name>]] [max-samples {<max-samples> all}]</pre> <p>Displays history of counter values (i.e., collected information for a sample).</p>	
Syntax Description	sample-id	<p>Sample name for which report file should be generated.</p> <ul style="list-style-type: none"> • congested • cpu_util—CPU utilization: milliseconds of time spent • disk_device_io—storage device I/O statistics • disk_io—operating system aggregate disk I/O: KB/sec • fan—fan speed • fs_mnt_bytes—filesystem usage: bytes • fs_mnt_inodes—filesystem usage: inodes • interface—network interface statistics • intf_util—network interface utilization: bytes • memory—system memory utilization: bytes

	<ul style="list-style-type: none"> • paging—paging activity: page faults • power—power supply usage • power-consumption • temperature—modules temperature • ib
interface	Allows limiting output to a particular interface's counters
group	Allows limiting output to a particular group of counters
counter	Allows limiting output to a particular counter. This option is available only if the option interface or group is chosen.
max-samples	Allows choosing a number of counter records to display. Range: 1-1000 records. The "all" option is meant for all available records. By default, 20 counter records are displayed.
Default	N/A
Configuration Mode	Any command mode
History	3.7.1102 3.8.1000: Modified configuration mode & example 3.9.2000: Modified note and example
Example	
<pre>switch (config) # show stats sample interface-ethernet data interface ethernet 1/1 max-samples 1</pre> <p>Sampling data for Interface ethernet counters: Eth1/1:</p> <pre> ----- Name Timestamp Value ----- Rx_packets 2000/12/25 10:27:53 0 Rx_unicast_packets 2000/12/25 10:27:53 0 Rx_multicast_packets 2000/12/25 10:27:53 0 Rx_broadcast_packets 2000/12/25 10:27:53 0 Rx_bytes 2000/12/25 10:27:53 0 Rx_discard_packets 2000/12/25 10:27:53 0 Rx_error_packets 2000/12/25 10:27:53 0 Rx_fcs_errors 2000/12/25 10:27:53 0 Rx_undersize_packets 2000/12/25 10:27:53 0 Rx_oversize_packets 2000/12/25 10:27:53 0 </pre>	

Rx_pause_packets	2000/12/25 10:27:53	0
Rx_unknown_control_opcode	2000/12/25 10:27:53	0
Rx_symbol_errors	2000/12/25 10:27:53	0
Rx_packets_of_64_bytes	2000/12/25 10:27:53	0
Rx_packets_of_65-127_bytes	2000/12/25 10:27:53	0
Rx_packets_of_128-255_bytes	2000/12/25 10:27:53	0
Rx_packets_of_256-511_bytes	2000/12/25 10:27:53	0
Rx_packets_of_512-1023_bytes	2000/12/25 10:27:53	0
Rx_packets_of_1024-1518_bytes	2000/12/25 10:27:53	0
Rx_packets_jumbo	2000/12/25 10:27:53	0
Tx_packets	2000/12/25 10:27:53	0
Tx_unicast_packets	2000/12/25 10:27:53	0
Tx_multicast_packets	2000/12/25 10:27:53	0
Tx_broadcast_packets	2000/12/25 10:27:53	0
Tx_bytes	2000/12/25 10:27:53	0
Tx_discard_packets	2000/12/25 10:27:53	0
Tx_error_packets	2000/12/25 10:27:53	0
Tx_hoq_discard_packets	2000/12/25 10:27:53	0
Tx_pause_packets	2000/12/25 10:27:53	0
Tx_pause_duration	2000/12/25 10:27:53	0
Related Commands		
Notes	<ul style="list-style-type: none"> • Filtering keyword depends on chosen <sample-id>. • Notice that this is a history of counters. Autocompletion and output can contain information for groups (interfaces) that is not present anymore in the system, and vice versa. If counters are not sampled, they will not appear in the output. • Output of collected information is implemented only for the following samples: <ul style="list-style-type: none"> ◦ memory ◦ paging ◦ power 	

Management Information Bases (MIBs)

Calculating of entPhysicalIndex in the Entity MIB

The inventory in the switch system can be accessed through a MIB browser. These devices are indexed (entPhysicalIndex) using three layers:

1. Module layer—includes modules located on system (e.g., cables, fan, power supply, and so forth). See the [module type breakdown table](#) for more details.
2. Device layer—a number identifying the specific device that is associated with the module (e.g., ASIC on a leaf, fan on the management board, and so forth).
3. Sensor layer—a number identifying the specific sensor that is associated with the device (e.g., fan sensors, temperature sensors, power sensors, and so forth).

Each layer is assigned a fixed position in the SNMP index number that represent it.

The physical entities in the system (other than port modules) use the following index schema:

Mod. Type ID	Module Index		Device Identifier				Sensor Type and Index	
1	2	3	4	5	6	7	8	9
Layer 1			Layer 2				Layer 3	

Quantum systems use the following index schema for port modules and port module sensors:

Mod. Type ID	Port Module Identifier								Port module Sensor index TX sensors in range 1..39 RX sensors in range 41..79	
1	2	3	4	5	6	7	8	9	10	
Layer 1	Layer 2								Layer 3	

Switch-IB, Switch-IB 2 use the following index schema for port modules and port module sensors:

Mod. Type ID	Port Module Identifier						Port Module Sensor Type 0 for TX 1 for RX	Sensor index	
1	2	3	4	5	6	7	8	9	
Layer 1	Layer 2						Layer 3		

Module type breakdown:

Number	Description
1	Chassis
2	Management
3	Spine
4	Leaf
5	Fan
6	Power supply
7	BBU
8	x86 CPU
9	Port module
Physical entities—10 digits representation	
1	Port module

i Note

Port module 9 digits representation is kept for backwards compatibility.

Device type breakdown:

Number	Description
1	PS
2	FAN
3	MGMT
4	BOARD_MONITOR
5	CPU_BOARD_MONITOR
6	SX
7	SIB
8	CPU_MEZZ_TEMP
9	CPU_MEZZ_VOLT
10	CPU package Sensor
11	CPU Core Sensor
12	SX_AMBIENT_TEMP
13	SX_MONITOR
14	AUX_IN_TMP_SNSR
15	AUX_OUT_TMP_SNSR
16	MAIN_IN_TMP_SNSR
17	MAIN_OUT_TMP_SNSR
18	CPU_MEZZ_TEMP
19	controller
20	QSFP_TEMP
21	QSFP-ASIC

Number	Description
22	Board AMB temp
23	Ports AMB temp
24	power-mon
25	PS_MONITOR
26	CURR_MONITOR
27	MGMT_MONITOR
28	acdc-monitor1
29	acdc-monitor2
30	POWER_DOMAIN
31	LEAF
32	SPINE
33	pwr-monitor
34	pvc-monitor
35	SWB AMB temp
36	pcie-switch-temp
37	SPC
38	On-board inlet
39	On-board outlet
40	QTM
41	Front AMB temp
42	AMBIENT_TEMP
43	COMEX VoltMonitor1
44	COMEX VoltMonitor2
45	COMEX Ambient Sensor
46	Gearbox Sensors
47	SODIMM
48	PCH thermal Sensor
49	NV

Number	Description
50	LEAKAGE

Sensor type breakdown:

Number	Description
1	t
2	f
3	p
4	cu
5	v
6	consumer_p
7	consumer_c
8	consumer_v
9	leakage

Examples

- entPhysicalIndex with value 401191311
 - 9 digits representation.
 - Layer 1 is “401”—“4” indicates a leaf (see [module type breakdown table](#)) and “01” indicates leaf at index #1 (i.e., leaf 01)
 - Layer 2 is “1913”—this is the identifier for one of the QSFP-ASIC in the system
 - Layer 3 is “11”—this is the identifier for temperature sensor #1
 - The description for this physical entity (appears in entPhysicalDescr column of the MIB) would be: L01/QSFP-ASIC-1/T1
- entPhysicalIndex with value 501020021
 - 9 digits representation.
 - Layer 1 is “501”—“5” indicates a fan (see [module type breakdown table](#)) and “01” indicates fan at index #1 (i.e., fan 01)

- Layer 2 is “0200”—this is the identifier for general fan in the system
- Layer 3 is “21”—this is the identifier for fan sensor #1
- The description for this physical entity (appears in entPhysicalDescr column of the MIB) would be: FAN1/FAN/F1
- For entPhysicalIndex with value 1000012700
 - 10 digits representation.
 - Layer 1 is “1”—port module (see [module type breakdown table](#)).
 - Layer 2 is “127”—port identifier
 - Layer 3 is “00”—no sensors for this port module
- For entPhysicalIndex with value 1000012742
 - 10 digits representation.
 - Layer 1 is “1”—port module (see [module type breakdown table](#)).
 - Layer 2 is “127”—port identifier
 - Layer 3 is “42”—sensor in the range 41..79 indicates an RX sensor

Notice

This document is provided for information purposes only and shall not be regarded as a warranty of a certain functionality, condition, or quality of a product. NVIDIA Corporation (“NVIDIA”) makes no representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this document and assumes no responsibility for any errors contained herein. NVIDIA shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This document is not a commitment to develop, release, or deliver any Material (defined below), code, or functionality.

NVIDIA reserves the right to make corrections, modifications, enhancements, improvements, and any other changes to this document, at any time without notice.

Customer should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

NVIDIA products are sold subject to the NVIDIA standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of NVIDIA and customer (“Terms of Sale”). NVIDIA hereby expressly objects to applying any customer general terms and conditions with regards to the purchase of the NVIDIA product referenced in this document. No contractual obligations are formed either directly or indirectly by this document.

NVIDIA products are not designed, authorized, or warranted to be suitable for use in medical, military, aircraft, space, or life support equipment, nor in applications where failure or malfunction of the NVIDIA product can reasonably be expected to result in personal injury, death, or property or environmental damage. NVIDIA accepts no liability for inclusion and/or use of NVIDIA products in such equipment or applications and therefore such inclusion and/or use is at customer’s own risk.

NVIDIA makes no representation or warranty that products based on this document will be suitable for any specified use. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer’s sole responsibility to evaluate and determine the applicability of any information contained in this document, ensure the product is suitable and fit for the application planned by customer, and perform the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer’s product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this document. NVIDIA accepts no liability related to any default, damage, costs, or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this document or (ii) customer product designs.

No license, either expressed or implied, is granted under any NVIDIA patent right, copyright, or other NVIDIA intellectual property right under this document. Information published by NVIDIA regarding third-party products or services does not constitute a license from NVIDIA to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property rights of the third party, or a license from NVIDIA under the patents or other intellectual property rights of NVIDIA.

Reproduction of information in this document is permissible only if approved in advance by NVIDIA in writing, reproduced without alteration and in full compliance with all applicable export laws and regulations, and accompanied by all associated conditions, limitations, and notices.

THIS DOCUMENT AND ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, “MATERIALS”) ARE BEING PROVIDED “AS IS.” NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL NVIDIA BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF

ANY USE OF THIS DOCUMENT, EVEN IF NVIDIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms of Sale for the product.

Trademarks

NVIDIA and the NVIDIA logo are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries. Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright 2024. PDF Generated on 11/18/2024