

Modicon

MCSESM, MCSESM-E, MCSESP Managed Switch Command Line Interface Reference Manual

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Safety Information

■ Important Information

Notice: Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.



CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury

Note: Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received training to recognize and avoid the hazards involved.

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About this Manual

Validity Note

The data and illustrations found in this book are not binding. We reserve the right to modify our products in line with our policy of continuous product development. The information in this document is subject to change without notice and should not be construed as a commitment by Schneider Electric.

User Comments

We welcome your comments about this document. You can reach us by e-mail at techpub@schneider-electric.com

Related Documents

The „Configuration“ user manual contains the information you need to start operating the device. It takes you step by step from the first startup operation through to the basic settings for operation in your environment.

The “Installation” user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.

The “Graphical User Interface” reference manual contains detailed information on using the graphical user interface to operate the individual functions of the device.

The “Command Line Interface” Reference Manual contains detailed information on using the Command Line Interface to operate the individual functions of the device.

The ConneXium Network Manager Management software provides you with additional options for smooth configuration and monitoring:

- ▶ Auto-topology discovery
- ▶ Browser interface
- ▶ Client/server structure
- ▶ Event handling
- ▶ Event log
- ▶ Simultaneous configuration of multiple devices
- ▶ Graphical user interface with network layout
- ▶ SNMP/OPC gateway

1 Address Conflict Detection (ACD)

1.1 address-conflict

Configure the address conflict settings.

1.1.1 address-conflict operation

Enable or disable the address conflict detection for the management interface.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** address-conflict operation

■ no address-conflict operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no address-conflict operation

1.1.2 address-conflict detection-mode

Configure the detection mode.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** address-conflict detection-mode <P-1>

Parameter	Value	Meaning
P-1	active-and-passive	Configure active and passive detection. During the IP address configuration, if you set the detection to 'active', then the device sends ARP or NDP probes into the network, and if you set the detection to 'passive', then the device listens continuously on the network.
	active-only	Configure only active detection. During IP address configuration 'active' the device sends only one ARP or NDP probe into the network.
	passive-only	Configure passive detection. The device listens passively on the network to verify that another device does not have the same IP address assigned.

1.1.3 address-conflict detection-ongoing

Enable or disable the ongoing detection. If enabled, the device sends periodic ARP or NDP probes.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: address-conflict detection-ongoing

■ no address-conflict detection-ongoing

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no address-conflict detection-ongoing

1.1.4 address-conflict delay

The maximum detection delay time in milliseconds. Time gap between ARP or NDP probes.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: address-conflict delay <P-1>

Parameter	Value	Meaning
P-1	20..500	Time gap between consecutive ARP or NDP probes ([ms], default 200).

1.1.5 address-conflict release-delay

Delay in seconds to the next ARP or NDP probe cycle after an IP address conflict was detected.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: address-conflict release-delay <P-1>

Parameter	Value	Meaning
P-1	3..3600	Delay between consecutive probe cycles after a conflict was detected ([sec], default 15).

1.1.6 address-conflict max-protection

Maximum number of frequent address protections.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: address-conflict max-protection <P-1>

Parameter	Value	Meaning
P-1	0..100	Maximum number of frequent address protections (default 1).

1.1.7 address-conflict protect-interval

Delay in milliseconds between two consecutive address protections.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: address-conflict protect-interval <P-1>

Parameter	Value	Meaning
P-1	20..10000	Delay between two consecutive protections ([ms], default 10000).

1.1.8 address-conflict trap-status

If enabled, this trap reports an address conflict.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: address-conflict trap-status
- no address-conflict trap-status
Disable the option
- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no address-conflict trap-status

1.2 show

Display device options and settings.

1.2.1 show address-conflict global

Display the component mode.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show address-conflict global

1.2.2 show address-conflict detected

Display the last detected address conflict.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show address-conflict detected

1.2.3 show address-conflict fault-state

Display the current conflict status.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show address-conflict fault-state

2 Access Control List (ACL)

2.1 mac

Set MAC parameters.

2.1.1 mac access-list extended name

Create a MAC access-list.

► **Mode:** Global Config Mode

► **Privilege Level:** Operator

► **Format:** `mac access-list extended name <P-1> [index <P-2>] deny src <P-3> dst <P-4> permit src <P-5> dst <P-6> [index]:` Specify an index for the ACL rule.

deny: Create a new rule for the current MAC access-list: Specify packets to reject.

src: Specify the source MAC and Mask.

dst: Specify the destination MAC and Mask

permit: Create a new rule for the current MAC access-list: Specify packets to forward.

src: Specify source MAC and Mask

dst: Specify the destination MAC and Mask

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..1023	Access-list rule index.
P-3	any	Enter for any source mac address and mask.
	srcmac-macmask	Enter source MAC and source MAC mask.
P-4	any	Enter for any destination mac address and mask.
	destmac-macmask	Enter destination MAC and destination MAC mask.
P-5	any	Enter for any source mac address and mask.
	srcmac-macmask	Enter source MAC and source MAC mask.
P-6	any	Enter for any destination mac address and mask.
	destmac-macmask	Enter destination MAC and destination MAC mask.

2.1.2 mac access-list extended rename

Rename an existing MAC access-list

► **Mode:** Global Config Mode

► **Privilege Level:** Operator

► **Format:** `mac access-list extended rename <P-1> <P-2>`

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	string	<name> ACL name.

2.1.3 mac access-list extended del

Delete a MAC access-list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac access-list extended del <P-1> [index <P-2>]
[index]: Specify an index for the ACL rule.

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..1023	Access-list rule index.

2.1.4 mac access-group name

Associate an ACL identified by name with a VLAN ID.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac access-group name <P-1> vlan <P-2> <P-3>
[sequence <P-4>]

vlan: VLAN ID

[sequence]: Indicate the sequence number

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..4042	Enter the VLAN ID.
P-3	in	Inbound direction.
P-4	1..4294967295	Sequence

■ no mac access-group name

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac access-group name <P-1> vlan [sequence]

2.1.5 mac access-group del

Disassociate an ACL identified by name with a VLAN ID.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac access-group del <P-1> vlan <P-2> <P-3>
[sequence <P-4>]

vlan: VLAN ID

[sequence]: Indicate the sequence number

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..4042	Enter the VLAN ID.
P-3	in	Inbound direction.
P-4	1..4294967295	Sequence

■ no mac access-group del

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac access-group del <P-1> vlan [sequence]

2.2 mac

MAC interface commands.

2.2.1 mac access-group name

Associate a specific MAC access-list identified by name with an interface, in a given direction.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac access-group name <P-1> <P-2> [sequence <P-3>]

[sequence]: Indicate the sequence number

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	in	Inbound direction.
P-3	1..4294967295	Sequence

■ no mac access-group name

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac access-group name <P-1> [sequence]

2.2.2 mac access-group del

Remove a specific MAC access-list identified by name from an interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac access-group del <P-1> <P-2> [sequence <P-3>]

[sequence]: Indicate the sequence number

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	in	Inbound direction.
P-3	1..4294967295	Sequence

- no mac access-group del
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no mac access-group del <P-1> <P-2> [sequence]

2.3 ip

Set IP parameters.

2.3.1 ip access-list extended name

Create an IP access-list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-list extended name <P-1> [index <P-2>] deny src <P-3> [<P-4> <P-5>] dst <P-6> [<P-7> <P-8>] [proto <P-9>] every [log] permit src <P-10> [<P-11> <P-12>] dst <P-13> [<P-14> <P-15>] [proto <P-16>] every [index]: Specify an index for the ACL rule.

deny: Create a new rule for the current IP access-list: Specify packets to reject.

src: Specify the source IP and Mask

dst: Specify the destination IP and Mask

[proto]: Specify the protocol

every: Every packet regardless the content.

[log]: Enable logging

permit: Create a new rule for the current IP access-list: Specify packets to forward.

src: Specify the source IP and Mask

dst: Specify destination IP and Mask

[proto]: Specify the protocol

every: Every packet regardless the content.

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..1023	Access-list rule index.
P-3	any	Enter for any source ip address and mask.
	a.b.c.d-e.f.g.h	Source IP address and mask (mask in wild-card notation) e.g 192.168.1.1-0.0.0.255.

Parameter	Value	Meaning
P-4	eq	Specify value that port number must be equal to.
P-5	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
P-6	1-65535	Port number
	any	Enter for any destination ip address and mask.
	a.b.c.d-e.f.g.h	Destination IP address and mask (mask in wild-card notation) e.g 192.168.1.1-0.0.0.255.
P-7	eq	Specify value that port number must be equal to.
P-8	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
P-9	1-65535	Port number
	icmp	ICMP
	igmp	IGMP
	ip-in-ip	IP-in-IP
	tcp	TCP
	udp	UDP
	ip	Any IP protocol
P-10	1-255	Protocol number
	any	Enter for any source ip address and mask.
	a.b.c.d-e.f.g.h	Source IP address and mask (mask in wild-card notation) e.g 192.168.1.1-0.0.0.255.
P-11	eq	Specify value that port number must be equal to.

Parameter	Value	Meaning
P-12	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
	1-65535	Port number
P-13	any	Enter for any destination ip address and mask.
	a.b.c.d-e.f.g.h	Destination IP address and mask (mask in wild-card notation) e.g 192.168.1.1-0.0.0.255.
P-14	eq	Specify value that port number must be equal to.
P-15	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
	1-65535	Port number
P-16	icmp	ICMP
	igmp	IGMP
	ip-in-ip	IP-in-IP
	tcp	TCP
	udp	UDP
	ip	Any IP protocol
	1-255	Protocol number

■ no ip access-list extended name

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip access-list extended name <P-1> [index] deny src dst [proto] every [log] permit src dst [proto] every

2.3.2 ip access-list extended rename

Rename an existing IP access-list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-list extended rename <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	string	<name> ACL name.

2.3.3 ip access-list extended del

Delete an IP access-list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-list extended del <P-1> [index <P-2>] [index]: Specify an index for the ACL rule.

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..1023	Access-list rule index.

2.3.4 ip access-group name

Associate an ACL identified by name with a VLAN ID.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-group name <P-1> vlan <P-2> <P-3> [sequence <P-4>]

vlan: VLAN ID

[sequence]: Indicate the sequence number

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..4042	Enter the VLAN ID.
P-3	in	Inbound direction.
P-4	1..4294967295	Sequence

- no ip access-group name
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip access-group name <P-1> vlan [sequence]

2.3.5 ip access-group del

Disassociate an ACL identified by name with a VLAN ID.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-group del <P-1> vlan <P-2> <P-3> [sequence <P-4>]

vlan: VLAN ID

[sequence]: Indicate the sequence number

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	1..4042	Enter the VLAN ID.
P-3	in	Inbound direction.
P-4	1..4294967295	Sequence

- no ip access-group del
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip access-group del <P-1> vlan [sequence]

2.4 ip

IP interface commands.

2.4.1 ip access-group name

Associate a specific IP access-list identified by name with an interface, in a given direction.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-group name <P-1> <P-2> [sequence <P-3>]

[sequence]: Indicate the order

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	in	Inbound direction.
P-3	1..4294967295	Sequence

- no ip access-group name
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip access-group name <P-1> <P-2> [sequence]

2.4.2 ip access-group del

Remove a specific IP access-list identified by name from an interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip access-group del <P-1> <P-2> [sequence <P-3>]
[sequence]: Indicate the order

Parameter	Value	Meaning
P-1	string	<name> ACL name.
P-2	in	Inbound direction.
P-3	1..4294967295	Sequence

- no ip access-group del
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip access-group del <P-1> <P-2> [sequence]

2.5 show

Display device options and settings.

2.5.1 show access-list global

Display the next free index for both MAC and IPv4 based access lists.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show access-list global

2.5.2 show access-list mac

Display the information for a specific MAC based access list.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show access-list mac [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..1023	Access-list rule index.

2.5.3 show access-list ip

Display the information for a specific IP based access list.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show access-list ip [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..1023	Access-list rule index.

2.5.4 show access-list assignment ip

Display the assignments of existing IP ACLs.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show access-list assignment ip <P-1>

Parameter	Value	Meaning
P-1	1000..1099	Access-list index.

2.5.5 show access-list assignment mac

Display the assignments of existing MAC ACLs.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show access-list assignment mac <P-1>

Parameter	Value	Meaning
P-1	10000..10099	Access-list index.

3 Application Lists

3.1 appllists

Configure an application list.

3.1.1 appllists set-authlist

Set an authentication list reference that shall be used by given application.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** appllists set-authlist <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<application> Name of an application list.
P-2	string	<authlist_name> Name of referenced authentication list.

3.1.2 appllists enable

Activate a login application list.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** appllists enable <P-1>

Parameter	Value	Meaning
P-1	string	<application> Name of an application list.

3.1.3 appllists disable

Deactivate a login application list.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** appllists disable <P-1>

Parameter	Value	Meaning
P-1	string	<application> Name of an application list.

3.2 show

Display device options and settings.

3.2.1 show applists

Display the ordered methods for application lists.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show applists

4 Authentication Lists

4.1 authlists

Configure an authentication list.

4.1.1 authlists add

Create a new login authentication list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `authlists add <P-1>`

Parameter	Value	Meaning
P-1	string	<authlist_name> Name of an authentication list.

4.1.2 authlists delete

Delete an existing login authentication list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `authlists delete <P-1>`

Parameter	Value	Meaning
P-1	string	<authlist_name> Name of an authentication list.

4.1.3 authlists set-policy

Set the policies of a login authentication list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `authlists set-policy <P-1> <P-2> [<P-3> [<P-4> [<P-5> [<P-6>]]]]`

Parameter	Value	Meaning
P-1	string	<authlist_name> Name of an authentication list.
P-2	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ias	Authentication by IAS server
	ldap	Authentication by remote server

Parameter	Value	Meaning
P-3	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ias	Authentication by IAS server
	ldap	Authentication by remote server
P-4	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ias	Authentication by IAS server
	ldap	Authentication by remote server
P-5	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ias	Authentication by IAS server
	ldap	Authentication by remote server
P-6	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ias	Authentication by IAS server
	ldap	Authentication by remote server

4.1.4 authlists enable

Activate a login authentication list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: authlists enable <P-1>

Parameter	Value	Meaning
P-1	string	<authlist_name> Name of an authentication list.

4.1.5 authlists disable

Deactivate a login authentication list.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: authlists disable <P-1>

Parameter	Value	Meaning
P-1	string	<authlist_name> Name of an authentication list.

4.2 show

Display device options and settings.

4.2.1 show authlists

Display the ordered methods for authentication lists.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show authlists

5 Auto Disable



WARNING

UNINTENDED OPERATION

Do not change cable positions if DHCP Option 82 is enabled. Check the user manual before servicing.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

5.1 auto-disable

Configure the Auto Disable condition settings.

5.1.1 auto-disable reason

Enables/disables port Recovery by reason on this device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: auto-disable reason <P-1>

Parameter	Value	Meaning
P-1	link-flap	Enable/disable link-flap.
	crc-error	Enable/disable crc-error.
	duplex-mismatch	Enable/disable duplex-mismatch.
	dhcp-snooping	Enable/disable dhcp-snooping.
	arp-rate	Enable/disable arp-rate.
	bpdu-rate	Enable/disable bpdu-rate.
	port-security	Enable/disable MAC based port security.
	overload-detection	Enable/disable overload-detection.
	speed-duplex	Enable/disable link speed and duplex monitor.
	loop-protection	Enable/disable loop protection.

■ no auto-disable reason

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no auto-disable reason <P-1>

5.2 auto-disable

Configure the Auto Disable condition settings.

5.2.1 auto-disable timer

Timer value in seconds after a deactivated port is activated again. Possible values are: 30-4294967295. A value of 0 disables the timer.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** auto-disable timer <P-1>

Parameter	Value	Meaning
P-1	30..4294967295	Timer value in seconds.

5.2.2 auto-disable reset

Reset the specific interface and reactivate the port.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** auto-disable reset [<P-1>]

Parameter	Value	Meaning
P-1	port	Press Enter to execute the command.

■ no auto-disable reset

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no auto-disable reset [<P-1>]

5.3 show

Display device options and settings.

5.3.1 show auto-disable brief

Display the Auto Disable summary per interface.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show auto-disable brief

5.3.2 show auto-disable reasons

Display the summary of the detected Auto Disable error reasons.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show auto-disable reasons

6 Cabletest

6.1 cable-test

6.1.1 cable-test

Select port on which to perform the cable test.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: cable-test <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

7 Class Of Service

7.1 classofservice

Class of service configuration.

7.1.1 classofservice ip-dscp-mapping

ip-dscp-mapping configuration

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** classofservice ip-dscp-mapping <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	af11	
	af12	
	af13	
	af21	
	af22	
	af23	
	af31	
	af32	
	af33	
	af41	
	af42	
	af43	
	be	
	cs0	
	cs1	
	cs2	
	cs3	
	cs4	
	cs5	
	cs6	
	cs7	
	ef	
	0	
	1	
	2	
3		
4		
5		
6		
7		
8		
9		
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11		
12		
13		
14		
15		
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18		
19		
20		
21		
22		
23		
24		
25		

Parameter	Value	Meaning
P-2	0..7	Enter the Traffic Class value.
P-3	0..3	Enter the Traffic Class value.

7.1.2 classofservice dot1p-mapping

Enter a VLAN priority and the traffic class it should be mapped to.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: classofservice dot1p-mapping <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	0..7	Enter the 802.1p priority.
P-2	0..7	Enter the Traffic Class value.
P-3	0..3	Enter a number in the given range.

7.2 classofservice

Interface classofservice configuration.

7.2.1 classofservice trust

trust configuration

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: classofservice trust <P-1>

Parameter	Value	Meaning
P-1	untrusted	Sets the class of service trust mode to untrusted
	dot1p	Sets the class of service trust mode to dot1p.
	ip-dscp	Sets the class of service trust mode to IP DSCP.

7.3 cos-queue

COS queue configuration

7.3.1 cos-queue strict

strict priority scheduler (default)

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: cos-queue strict <P-1> <P-2>

Parameter	Value	Meaning
P-1	0..7	Enter a Queue Id from 0 to 7.
P-2	0..3	Enter a number in the given range.

7.3.2 cos-queue weighted

weighted scheduler

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: cos-queue weighted <P-1> <P-2>

Parameter	Value	Meaning
P-1	0..7	Enter a Queue Id from 0 to 7.
P-2	0..3	Enter a number in the given range.

7.3.3 cos-queue max-bandwidth

Maximum/shaped bandwidth for the queues

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: cos-queue max-bandwidth <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	0..3	Enter a number in the given range.
P-2	0..7	Enter a Queue Id from 0 to 7.
P-3	0..100	Enter a number in the given range.

7.3.4 cos-queue min-bandwidth

Minimum/guaranteed bandwidth for the queues when in weighted mode

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: cos-queue min-bandwidth <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	0..3	Enter a number in the given range.
P-2	0..7	Enter a Queue Id from 0 to 7.
P-3	0..100	Enter a number in the given range.

7.4 show

Display device options and settings.

7.4.1 show classofservice ip-dscp-mapping

Display the ip-dscp-mapping configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show classofservice ip-dscp-mapping

7.4.2 show classofservice dot1p-mapping

Display a table containing the vlan priority to traffic class mappings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show classofservice dot1p-mapping

7.4.3 show classofservice trust

Display a table containing the trust mode of every interface.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show classofservice trust

7.4.4 show cos-queue

Display the Class Of Service (CoS) queue parameters.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show cos-queue

8 Command Line Interface (CLI)

8.1 cli

Set the CLI preferences.

8.1.1 cli serial-timeout

Set login timeout for serial line connection to CLI. Setting to 0 will disable the timeout. The value is active after next login.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: cli serial-timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Enter a number in the given range. Setting to 0 will disable the timeout.

8.1.2 cli prompt

Change the system prompt. Following wildcards are allowed: %d date, %t time, %i IP address, %m MAC address, %p product name

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: cli prompt <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters. Following wildcards are allowed:\n %d date, %t time, %i IP address, %m MAC address, %p product name

8.1.3 cli numlines

Screen size for 'more' (23 = default). Enter a 0 will disable the feature. The value is only valid for the current session.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: cli numlines <P-1>

Parameter	Value	Meaning
P-1	0..250	Screen size for 'more' (23 = default). Enter a 0 will disable the feature. The value is only valid for the current session.

8.1.4 cli banner operation

Enable or disable the CLI login banner.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: cli banner operation

■ no cli banner operation

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no cli banner operation

8.1.5 cli banner text

Set the text for the CLI login banner (C printf format syntax allowed: \n \t).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: cli banner text <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 1024 characters (allowed characters are from ASCII 32 to 127).

8.2 show

Display device options and settings.

8.2.1 show cli global

Display the CLI preferences.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show cli global

8.2.2 show cli command-tree

Display a list of every command.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show cli command-tree

8.3 logging

Logging configuration.

8.3.1 logging cli-command

Enable or disable the CLI command logging.

- ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** logging cli-command
-
- **no logging cli-command**
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** no logging cli-command

8.4 show

Display device options and settings.

8.4.1 show logging cli-command

Display the CLI command logging preferences.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging cli-command

9 Clock

9.1 clock

Configure local and DST clock settings.

9.1.1 clock set

Edit current local time.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock set <P-1> <P-2>

Parameter	Value	Meaning
P-1	YYYY-MM-DD	Local date (range: 2004-01-01 - 2037-12-31).
P-2	HH:MM:SS	Local time.

9.1.2 clock timezone offset

Local time offset (in minutes) with respect to UTC (positive values for locations east of Greenwich).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock timezone offset <P-1>

Parameter	Value	Meaning
P-1	-780..840	Edit the timezone offset (in minutes).

9.1.3 clock timezone zone

Edit the timezone acronym (max. 4 characters).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock timezone zone <P-1>

Parameter	Value	Meaning
P-1	string	Edit the timezone acronym (max 4 characters).

9.1.4 clock summer-time mode

Configure summer-time mode parameters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock summer-time mode <P-1>

Parameter	Value	Meaning
P-1	disable	Disable recurring summer-time mode.
	recurring	Enable recurring summer-time mode.
	eu	Enable recurring summer-time used in most parts of the European Union.
	usa	Enable recurring summer-time used in most parts of the USA.

9.1.5 clock summer-time recurring start

Edit the starting date and time for daylight saving time.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock summer-time recurring start <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	none	
	first	
	second	
	third	
	fourth	
	last	
P-2	none	
	sun	Sunday
	mon	Monday
	tue	Tuesday
	wed	Wednesday
	thu	Thursday
	fri	Friday
	sat	Saturday
P-3	none	
	jan	January
	feb	February
	mar	March
	apr	April
	may	May
	jun	June
	jul	July
	aug	August
	sep	September
	oct	October
	nov	November
	dec	December
P-4	string	<hh:mm> Present time in hh:mm format (00:00-23:59).

9.1.6 clock summer-time recurring end

Edit the ending date and time for daylight saving time.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock summer-time recurring end <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	none	
	first	
	second	
	third	
	fourth	
	last	
P-2	none	
	sun	Sunday
	mon	Monday
	tue	Tuesday
	wed	Wednesday
	thu	Thursday
	fri	Friday
sat	Saturday	
P-3	none	
	jan	January
	feb	February
	mar	March
	apr	April
	may	May
	jun	June
	jul	July
	aug	August
	sep	September
	oct	October
	nov	November
dec	December	
P-4	string	<hh:mm> Present time in hh:mm format (00:00-23:59).

9.1.7 clock summer-time zone

Edit timezone acronym for summer-time (max. 4 characters).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clock summer-time zone <P-1>

Parameter	Value	Meaning
P-1	string	Edit the timezone acronym (max 4 characters).

9.2 show

Display device options and settings.

9.2.1 show clock

Display the current time information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show clock [summer-time]
[summer-time]: Display the summer-time parameters.

10 Configuration

10.1 save

Save the configuration to the specified destination.

10.1.1 save profile

Save the configuration to the specific profile.

- ▶ Mode: All Privileged Modes
- ▶ Privilege Level: Operator
- ▶ Format: save profile <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

10.2 config

Configure the configuration saving settings.

10.2.1 config watchdog admin-state

Enable or disable the configuration undo feature.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: config watchdog admin-state
- no config watchdog admin-state
Disable the option
- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no config watchdog admin-state

10.2.2 config watchdog timeout

Configure the configuration undo timeout (unit: seconds).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: config watchdog timeout <P-1>

Parameter	Value	Meaning
P-1	30..600	Enter a number in the given range.

10.2.3 config encryption password set

Set the configuration file password.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config encryption password set [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 64 characters.
P-2	string	Enter a user-defined text, max. 64 characters.

10.2.4 config encryption password clear

Clear the configuration file password.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config encryption password clear [<P-1>]

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 64 characters.

10.2.5 config envm auto-update

Allow automatic firmware updates with this memory device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config envm auto-update <P-1>

Parameter	Value	Meaning
P-1	usb	USB Storage Device

■ no config envm auto-update

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no config envm auto-update <P-1>

10.2.6 config envm sshkey-auto-update

Allow automatic ssh key updates with this memory device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config envm sshkey-auto-update <P-1>

Parameter	Value	Meaning
P-1	usb	USB Storage Device

■ no config envm sshkey-auto-update

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no config envm sshkey-auto-update <P-1>

10.2.7 config envm config-save

Allow the configuration to be saved to this memory device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: config envm config-save <P-1>

Parameter	Value	Meaning
P-1	usb	USB Storage Device

■ no config envm config-save

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no config envm config-save <P-1>

10.2.8 config envm load-priority

Configure the order of configuration load attempts from memory devices at boot time. If one load is successful, then the device discards further attempts.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: config envm load-priority <P-1> <P-2>

Parameter	Value	Meaning
P-1	usb	USB Storage Device
P-2	disable	Config will not be loaded at all
	first	Config will be loaded first. If successful, no other config will be tried.

10.2.9 config profile select

Select a configuration profile to be the active configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config profile select <P-1> <P-2>

Parameter	Value	Meaning
P-1	nvm	You can only select nvm for this command.
P-2	1..20	Index of the profile entry.

10.2.10 config profile delete

Delete a specific configuration profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config profile delete <P-1> num <P-2> profile <P-3>

num: Select the index of a profile to delete.

profile: Select the name of a profile to delete.

Parameter	Value	Meaning
P-1	nvm	non-volatile memory
	envm	external non-volatile memory device
P-2	1..20	Index of the profile entry.
P-3	string	Enter a user-defined text, max. 32 characters.

10.2.11 config fingerprint verify nvm profile

Select the name of a profile to be verified.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config fingerprint verify nvm profile <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	Enter hash as 40 hexa-decimal characters.

10.2.12 config fingerprint verify nvm num

Select the index number of a profile to be verified.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config fingerprint verify nvm num <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..20	Index of the profile entry.
P-2	string	Enter hash as 40 hexa-decimal characters.

10.2.13 config fingerprint verify envm profile

Select the name of a profile to be verified.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config fingerprint verify envm profile <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	Filename.

Parameter	Value	Meaning
P-2	string	Enter hash as 40 hexa-decimal characters.

10.2.14 config fingerprint verify envm num

Select the index number of a profile to be verified.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config fingerprint verify envm num <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..20	Index of the profile entry.
P-2	string	Enter hash as 40 hexa-decimal characters.

10.2.15 config remote-backup operation

Enable or disable the remote backup of the configuration profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config remote-backup operation

■ no config remote-backup operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no config remote-backup operation

10.2.16 config remote-backup destination

Enter the destination URL for the configuration profile backup. The following wildcards are allowed:\n %d=date, %t=time, %i=IP address, %m=MAC address ,%p=product name.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config remote-backup destination <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.2.17 config remote-backup username

Enter the user name to authenticate on the remote server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config remote-backup username <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.2.18 config remote-backup password

Enter the password to authenticate on the remote server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: config remote-backup password <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.3 copy

Copy different kinds of items.

10.3.1 copy sysinfo system envm

Copy the system information to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy sysinfo system envm [filename <P-1>]
[filename]: Enter the filename (format xyz.html) to be saved in external non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

10.3.2 copy sysinfoall system envm

Copy the system information and the event log from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy sysinfoall system envm

10.3.3 copy firmware envm

Copy a firmware image to the device from external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy firmware envm <P-1> system

system: Copy a firmware image to the device from external non-volatile memory.

Parameter	Value	Meaning
P-1	string	Filename.

10.3.4 copy firmware remote

Copy a firmware image to the device from a server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy firmware remote <P-1> system

system: Copy a firmware image to the device from a file server.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.3.5 copy config running-config nvm

Copy the running-config to non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy config running-config nvm [profile <P-1>] [profile]: Save the configuration as a specific profile name.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

10.3.6 copy config running-config remote

Copy the running-config to a file server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy config running-config remote <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.3.7 copy config nvm

Load a configuration from non-volatile memory to the running-config.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy config nvm [profile <P-1>] running-config remote <P-2>

[profile]: Load a configuration from a specific profile name.

running-config: (Re)-load a configuration from non-volatile memory to the running-config.

remote: Copy a configuration from non-volatile memory to a server.

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	Enter a user-defined text, max. 128 characters.

10.3.8 copy config envm

Copy a configuration from external non-volatile memory to non-volatile memory.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: copy config envm [profile <P-1>] nvm

[profile]: Copy a specific configuration profile from external non-volatile memory to non-volatile memory.

nvm: Copy a specific profile from external non-volatile memory to non-volatile memory.

Parameter	Value	Meaning
P-1	string	Filename.

10.3.9 copy config remote

Copy a configuration file to the device from a server.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: copy config remote <P-1> nvm [profile <P-2>]
running-config

nvm: Copy a configuration file from a server to non-volatile memory.

[profile]: Copy a configuration from a server to a specific profile in non-volatile memory.

running-config: Copy a configuration file from a server to the running-config.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 32 characters.

10.3.10 copy sfp-white-list remote

Copy the SFP WhiteList from server to the device.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Operator

▶ Format: copy sfp-white-list remote <P-1> nvm

nvm: Copy the SFP WhiteList from server to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.3.11 copy sfp-white-list envm

Copy the SFP WhiteList from external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: `copy sfp-white-list envm <P-1> nvm`

nvm: Copy the SFP WhiteList from external non-volatile memory to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

10.4 clear

Clear several items.

10.4.1 clear config

Clear the running configuration.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `clear config [<P-1>]`

Parameter	Value	Meaning
P-1	keep-ip	Keep the IP parameters for management at clear configuration.

10.4.2 clear factory

Set the device back to the factory settings (use with care).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `clear factory`

10.4.3 clear sfp-white-list

Clear the SFP WhiteList.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: `clear sfp-white-list`

10.5 show

Display device options and settings.

10.5.1 show running-config script

Display the currently running configuration (CLI script).

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show running-config script [all]
[all]: Display the currently running configuration (CLI script).

10.6 show

Display device options and settings.

10.6.1 show config envm settings

Display the settings of the external non-volatile memory.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show config envm settings

10.6.2 show config envm properties

Display the properties of the external non-volatile memory.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show config envm properties

10.6.3 show config watchdog

Display the Auto Configuration Undo settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show config watchdog

10.6.4 show config encryption

Display the settings for configuration encryption.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show config encryption

10.6.5 show config profiles

Display the configuration profiles.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show config profiles <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	nvm	non-volatile memory
	envm	external non-volatile memory device
P-2	1..20	Index of the profile entry.

10.6.6 show config status

Display the synchronization status of the running configuration with the non-volatile memory and the EAM.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show config status

10.6.7 show config remote-backup

Display the settings and the status for remote backup of the configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show config remote-backup

10.7 swap

Swap software images.

10.7.1 swap firmware system backup

Swap the main and backup images.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** swap firmware system backup

11 Dynamic ARP Inspection

11.1 ip

Set IP parameters.

11.1.1 ip arp-inspection verify src-mac

If enabled verifies the source MAC address in the ethernet packet against the sender MAC address in a ARP request/response packet body. If disabled does not perform this additional security check.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection verify src-mac

■ no ip arp-inspection verify src-mac

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip arp-inspection verify src-mac

11.1.2 ip arp-inspection verify dst-mac

If enabled verifies the destination MAC address in the (unicast) ethernet packet against the MAC address in a ARP response packet body. If disabled does not perform this additional security check.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection verify dst-mac

■ no ip arp-inspection verify dst-mac

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip arp-inspection verify dst-mac

11.1.3 ip arp-inspection verify ip

If enabled validates the sender protocol address (always) and the target protocol address (response) in the ARP packet body to be a public unicast IP address. Such addresses exclude 0.0.0.0, multicast/broadcast addresses, reserved addresses and loopback addresses. If disabled does not perform this additional security check.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection verify ip

■ no ip arp-inspection verify ip

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip arp-inspection verify ip

11.1.4 ip arp-inspection access-list add

This command creates a new ARP ACL (and optionally activates it).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection access-list add <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.
P-2	active	Activate the option.
	inactive	Inactivate the option.

11.1.5 ip arp-inspection access-list delete

This command deletes an ARP ACL (and all rules associated with it).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection access-list delete <P-1>

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.

11.1.6 ip arp-inspection access-list mode

This command activates or deactivates an ARP ACL.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection access-list mode <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.
P-2	active	Activate the option.
	inactive	Inactivate the option.

11.1.7 ip arp-inspection access-list rule add

This command creates a new ARP ACL rule, associated with an ACL name and a MAC/IP address. Notice that the number of active ACL rules in an ACL is limited to 20.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip arp-inspection access-list rule add <P-1> <P-2> <P-3> [<P-4>]`

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.
P-2	aa:bb:cc:dd:ee:ff	MAC address.
P-3	A.B.C.D	IP address.
P-4	active	Activate the option.
	inactive	Inactivate the option.

11.1.8 ip arp-inspection access-list rule delete

This command deletes an ARP ACL rule, associated with a ACL name and MAC/IP address.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip arp-inspection access-list rule delete <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.
P-2	aa:bb:cc:dd:ee:ff	MAC address.
P-3	A.B.C.D	IP address.

11.1.9 ip arp-inspection access-list rule mode

This command activates or deactivates a configured ARP ACL rule, associated with a ACL name and MAC/IP address.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip arp-inspection access-list rule mode <P-1> <P-2> <P-3> <P-4>`

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.
P-2	aa:bb:cc:dd:ee:ff	MAC address.
P-3	A.B.C.D	IP address.
P-4	active	Activate the option.
	inactive	Inactivate the option.

11.2 clear

Clear several items.

11.2.1 clear ip arp-inspection statistics

This command clears the Dynamic ARP Inspection (DAI) statistics on all VLANs.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear ip arp-inspection statistics

11.3 ip

IP commands.

11.3.1 ip arp-inspection mode

Enables or disables Dynamic ARP Inspection (DAI) on a VLAN.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection mode <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

■ no ip arp-inspection mode

Disable the option

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip arp-inspection mode <P-1>

11.3.2 ip arp-inspection log

Enables or disables DAI logging on a VLAN.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection log <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

- no ip arp-inspection log
Disable the option
 - ▶ Mode: VLAN Database Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip arp-inspection log <P-1>

11.3.3 ip arp-inspection bind-check

Enables or disables the DAI binding-check on a VLAN. If enabled, an ARP frame received on an untrusted port (in a DAI enabled VLAN) is checked. This test starts when a ARP ACL exists but the condition does not match in the rule table and the ACL strict flag is not set or when the ARP ACL not exist.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection bind-check <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

- no ip arp-inspection bind-check
Disable the option
 - ▶ Mode: VLAN Database Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip arp-inspection bind-check <P-1>

11.3.4 ip arp-inspection access-list strict

Enables or disables the strict DAI ACL check on a VLAN. If an ARP ACL is defined for the VLAN and there is no match for the received ARP packet, then (if this option is enabled) the packet is dropped without consulting the DHCP Snooping bindings database.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection access-list strict <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

- no ip arp-inspection access-list strict
Disable the option
 - ▶ Mode: VLAN Database Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip arp-inspection access-list strict <P-1>

11.3.5 ip arp-inspection access-list assign

(Un) Configure the ARP ACL used to filter ARP packets on a VLAN. If the ARP ACL name is omitted, then no ACL is assigned to this VLAN. If the ARP ACL name does not exist in the ACL table, then it depends on the DHCP Snooping bindings database and/or it's configured usage whether an ARP packet is forwarded or dropped.

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip arp-inspection access-list assign <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	<acl-name> Name of ACL.

11.4 ip

IP interface commands.

11.4.1 ip arp-inspection trust

This command configures an interface as trusted or untrusted. Dynamic ARP Inspection (DAI) forwards valid ARP packets on trusted interfaces without inspection. On un-trusted interfaces ARP packets will be subject to ARP inspection.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** ip arp-inspection trust
- no ip arp-inspection trust
Disable the option
- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no ip arp-inspection trust

11.4.2 ip arp-inspection auto-disable

Enables or disables the auto-disable feature for an interface, applicable when the ARP packet rate exceeds the limit.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip arp-inspection auto-disable

- no ip arp-inspection auto-disable
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ip arp-inspection auto-disable

11.4.3 ip arp-inspection limit

This command configures an interface for a maximum ARP packet rate in a burst interval, or disables it. If the rate of ARP packets exceed this limit in consecutive intervals then all further packets are dropped. If that happens and additionally the auto-disable feature is enabled, then the port is disabled automatically.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp-inspection limit <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	-1..300	Specifies the rate limit value (in packets per seconds, pps) for Dynamic ARP Inspection (DAI) purposes. The value -1 switches rate limiting off.
P-2	1..15	Specifies the burst interval value for Dynamic ARP Inspection (DAI) purposes. Because this parameter is optional it leaves unchanged if omitted.

11.5 show

Display device options and settings.

11.5.1 show ip arp-inspection global

This command displays the global Dynamic ARP Inspection (DAI) configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip arp-inspection global

11.5.2 show ip arp-inspection statistics dropped

This command lists statistics for ARP packets dropped by Dynamic ARP Inspection (DAI).

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip arp-inspection statistics dropped

11.5.3 show ip arp-inspection statistics forwarded

This command lists statistics for ARP packets forwarded by Dynamic ARP Inspection (DAI).

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip arp-inspection statistics forwarded

11.5.4 show ip arp-inspection access-list names

This command displays a list of all existing ARP ACLs.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip arp-inspection access-list names

11.5.5 show ip arp-inspection access-list rules

This command displays all ACL rules of a dedicated ARP ACL.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip arp-inspection access-list rules <P-1>

Parameter	Value	Meaning
P-1	string	<acl-name> Name of ACL.

11.5.6 show ip arp-inspection interfaces

This command shows the Dynamic ARP Inspection (DAI) status of all interfaces.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip arp-inspection interfaces

11.5.7 show ip arp-inspection vlan

This command displays the VLAN based Dynamic ARP Inspection (DAI) status.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip arp-inspection vlan

12 Debugging

12.1 debug

Different tools to assist in debugging the device.

12.1.1 debug tcpdump help

Display the help file for the tcpdump tool.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: debug tcpdump help

12.1.2 debug tcpdump start cpu

Start capture with default values.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: debug tcpdump start cpu [filter <P-1>] [parms <P-2>]

[filter]: Start capture with values from a filter file.

[parms]: Start capture with the tcpdump parameters (for details see tcpdump help).

Parameter	Value	Meaning
P-1	string	<filename> Enter a valid filename.
P-2	string	Enter a user-defined text, max. 255 characters.

12.1.3 debug tcpdump stop

Abort capture of network traffic.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: debug tcpdump stop

12.1.4 debug tcpdump filter show

Display a known filter file.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: debug tcpdump filter show <P-1>

Parameter	Value	Meaning
P-1	string	<filename> Enter a valid filename.

12.1.5 debug tcpdump filter list

Display every available filter file.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: debug tcpdump filter list

12.1.6 debug tcpdump filter delete

Delete a known filter file.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: debug tcpdump filter delete <P-1>

Parameter	Value	Meaning
P-1	string	<filename> Enter a valid filename.

12.2 copy

Copy different kinds of items.

12.2.1 copy tcpdumpcap nvm envm

Copy the capture file from non-volatile memory to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy tcpdumpcap nvm envm [<P-1>]

Parameter	Value	Meaning
P-1	string	<filename> Enter a valid filename.

12.2.2 copy tcpdumpcap nvm remote

Copy the capture file from the device to a server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy tcpdumpcap nvm remote <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

12.2.3 copy tcpdumpfilter remote

Copy the filter file from a server to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: `copy tcpdumpfilter remote <P-1> nvm <P-2>`

nvm: Copy the filter file from a server to non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	<filename> Enter a valid filename.

12.2.4 copy tcpdumpfilter envm

Copy the capture filter from external non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: `copy tcpdumpfilter envm <P-1> nvm [<P-2>]`

nvm: Copy the capture filter from external non-volatile memory to non-volatile memory.

Parameter	Value	Meaning
P-1	string	<filename> Enter a valid filename.
P-2	string	<filename> Enter a valid filename.

12.2.5 copy tcpdumpfilter nvm

Copy the capture filter from non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: `copy tcpdumpfilter nvm <P-1> envm [<P-2>] remote <P-3>`

envm: Copy the capture filter from non-volatile memory to external non-volatile memory.

remote: Copy the capture file from non-volatile memory to a server.

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	<filename> Enter a valid filename.
P-3	string	Enter a user-defined text, max. 128 characters.

13 Device Monitoring

13.1 device-status

Configure various device conditions to be monitored.

13.1.1 device-status monitor link-failure

Enable or disable monitor state of network connection(s).

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** device-status monitor link-failure

■ no device-status monitor link-failure

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** no device-status monitor link-failure

13.1.2 device-status monitor temperature

Enable or disable monitoring of the device temperature.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** device-status monitor temperature

■ no device-status monitor temperature

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** no device-status monitor temperature

13.1.3 device-status monitor envm-removal

Enable or disable monitoring the presence of the external non-volatile memory.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** device-status monitor envm-removal

■ no device-status monitor envm-removal

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** no device-status monitor envm-removal

13.1.4 device-status monitor envm-not-in-sync

Enable or disable monitoring synchronization between the external non-volatile memory and the running configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: device-status monitor envm-not-in-sync

■ no device-status monitor envm-not-in-sync

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no device-status monitor envm-not-in-sync

13.1.5 device-status monitor ring-redundancy

Enable or disable monitoring if ring-redundancy is present.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: device-status monitor ring-redundancy

■ no device-status monitor ring-redundancy

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no device-status monitor ring-redundancy

13.1.6 device-status monitor power-supply

Enable or disable monitoring the condition of the power supply(s).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: device-status monitor power-supply <P-1>

Parameter	Value	Meaning
P-1	1..2	Number of power supply.

■ no device-status monitor power-supply

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no device-status monitor power-supply <P-1>

13.1.7 device-status trap

Configure the device to send a trap when the device status changes.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: device-status trap

- no device-status trap
 - Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no device-status trap

13.2 device-status

Configure various device conditions to be monitored.

13.2.1 device-status link-alarm

Configure the monitor settings of the port link.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: device-status link-alarm

- no device-status link-alarm
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no device-status link-alarm

13.3 show

Display device options and settings.

13.3.1 show device-status monitor

Display the device monitoring configurations.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show device-status monitor

13.3.2 show device-status state

Display the current state of the device.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show device-status state

13.3.3 show device-status trap

Display the device trap information and configurations.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show device-status trap

13.3.4 show device-status events

Display occurred device status events.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show device-status events

13.3.5 show device-status link-alarm

Display the monitor configurations of the network ports.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show device-status link-alarm

13.3.6 show device-status all

Display the configurable device status settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show device-status all

14 Device Security

14.1 security-status

Configure the security status settings.

14.1.1 security-status monitor pwd-change

Sets the monitoring of default password change for\n'user' and 'admin'.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor pwd-change

■ no security-status monitor pwd-change

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor pwd-change

14.1.2 security-status monitor pwd-min-length

Sets the monitoring of minimum length of the password\n(smaller 8).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor pwd-min-length

■ no security-status monitor pwd-min-length

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor pwd-min-length

14.1.3 security-status monitor pwd-policy-config

Sets the monitoring whether the minimum password policy is configured. The device changes the security status to the value "error" if the value for at least one of the following password rules is 0:\n"minimum upper cases", "minimum lower cases", "minimum numbers", "minimum special characters".

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor pwd-policy-config

- no security-status monitor pwd-policy-config
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no security-status monitor pwd-policy-config

14.1.4 security-status monitor pwd-policy-inactive

Sets the monitoring whether at least one user is\nconfigured with inactive policy check.\n\nThe device changes the security status to the value "error" if the function "policy check" is inactive for at least 1 user account.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor pwd-policy-inactive

- no security-status monitor pwd-policy-inactive
Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor pwd-policy-inactive

14.1.5 security-status monitor telnet-enabled

Sets the monitoring of the activation of telnet on\nthe switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor telnet-enabled

- no security-status monitor telnet-enabled
Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor telnet-enabled

14.1.6 security-status monitor http-enabled

Sets the monitoring of the activation of http on the switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor http-enabled

- no security-status monitor http-enabled
Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor http-enabled

14.1.7 security-status monitor snmp-unsecure

Sets the monitoring of SNMP security\n(SNMP v1/v2 is enabled or v3 encryption is disabled).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor snmp-unsecure

■ no security-status monitor snmp-unsecure

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor snmp-unsecure

14.1.8 security-status monitor sysmon-enabled

Sets the monitoring of the activation of System Monitor 1 on the switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor sysmon-enabled

■ no security-status monitor sysmon-enabled

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor sysmon-enabled

14.1.9 security-status monitor extnvm-upd-enabled

Sets the monitoring of activation of the configuration\n saving to external non volatile memory.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor extnvm-upd-enabled

■ no security-status monitor extnvm-upd-enabled

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor extnvm-upd-enabled

14.1.10 security-status monitor no-link-enabled

Sets the monitoring of no link detection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor no-link-enabled

- no security-status monitor no-link-enabled
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no security-status monitor no-link-enabled

14.1.11 security-status monitor esc-enabled

Sets the monitoring of Ethernet Switch Configurator.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor esc-enabled

- no security-status monitor esc-enabled
Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor esc-enabled

14.1.12 security-status monitor extnvm-load-unsecure

Sets the monitoring of security of the configuration loading from extnvm.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor extnvm-load-unsecure

- no security-status monitor extnvm-load-unsecure
Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor extnvm-load-unsecure

14.1.13 security-status monitor iec61850-mms-enabled

Sets the monitoring of the activation of IEC 61850 MMS on the switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor iec61850-mms-enabled

- no security-status monitor iec61850-mms-enabled
Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor iec61850-mms-enabled

14.1.14 security-status monitor https-certificate

Sets the monitoring whether auto generated self-signed HTTPS certificate is in use.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor https-certificate

■ no security-status monitor https-certificate

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor https-certificate

14.1.15 security-status monitor modbus-tcp-enabled

Sets the monitoring of the activation of Modbus/TCP server on the switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor modbus-tcp-enabled

■ no security-status monitor modbus-tcp-enabled

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor modbus-tcp-enabled

14.1.16 security-status monitor ethernet-ip-enabled

Sets the monitoring of the activation of EtherNet/IP protocol on the switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status monitor ethernet-ip-enabled

■ no security-status monitor ethernet-ip-enabled

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no security-status monitor ethernet-ip-enabled

14.1.17 security-status trap

Configure if a trap is sent when the security status\nchanges.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status trap

- no security-status trap
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no security-status trap

14.2 security-status

Configure the security status interface settings.

14.2.1 security-status no-link

Configure the monitoring of the specific ports.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: security-status no-link

- no security-status no-link
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no security-status no-link

14.3 show

Display device options and settings.

14.3.1 show security-status monitor

Display the security status monitoring settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show security-status monitor

14.3.2 show security-status state

Display the current security status.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show security-status state

14.3.3 show security-status no-link

Display the settings of the monitoring of the specific network ports.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show security-status no-link

14.3.4 show security-status trap

Display the security status trap information and settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show security-status trap

14.3.5 show security-status events

Display the occurred security status events.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show security-status events

14.3.6 show security-status all

Display the security status settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show security-status all

15 Dynamic Host Configuration Protocol (DHCP)

15.1 dhcp-server

Modify DHCP Server parameters.

15.1.1 dhcp-server operation

Enable or disable the DHCP server on this port.

- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: dhcp-server operation
-
- no dhcp-server operation
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dhcp-server operation

15.2 dhcp-server

Modify DHCP Server parameters.

15.2.1 dhcp-server operation

Enable or disable the DHCP server globally.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: dhcp-server operation
-
- no dhcp-server operation
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dhcp-server operation

15.2.2 dhcp-server addr-probe

Enable or disable the DHCP address probing.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dhcp-server addr-probe

■ no dhcp-server addr-probe

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no dhcp-server addr-probe

15.2.3 dhcp-server pool add

Add a pool

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dhcp-server pool add <P-1> dynamic <P-2> <P-3> static <P-4>

dynamic: Add a dynamic pool (one or more IPs).

static: Add a static pool (one IP).

Parameter	Value	Meaning
P-1	1..128	Pool ID.
P-2	A.B.C.D	IP address.
P-3	A.B.C.D	IP address.
P-4	A.B.C.D	IP address.

15.2.4 dhcp-server pool modify

Modify the dynamic address pool

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dhcp-server pool modify <P-1> first-ip <P-2> last-ip <P-3> mode interface <P-4> mac <P-5> clientid <P-6> remoteid <P-7> circuitid <P-8> relay <P-9> vlan <P-10> leasetime <P-11> option configpath <P-12> gateway <P-13> netmask <P-14> wins <P-15> dns <P-16> hostname <P-17> schneider electric-device

first-ip: Modify the first IP.

last-ip: Modify the last IP.

mode: Pool mode settings.

interface: Interface mode.

mac: MAC mode.

clientid: Clientid mode.

remoteid: Remoteid mode.

circuitid: Circuitid mode.

relay: Relay mode.
 vlan: VLAN mode.
 leasetime: Enter the leasetime in seconds.
 option: Configuration option.
 configpath: Configpath in 'tftp://<servername>/<file>' format.
 gateway: Default gateway.
 netmask: Option netmask.
 wins: Option wins.
 dns: Option dns.
 hostname: Option hostname.
 schneider electric-device: Set this pool to Schneider Electric devices only.

Parameter	Value	Meaning
P-1	1..128	Pool ID.
P-2	A.B.C.D	IP address.
P-3	A.B.C.D	IP address.
P-4	slot no./port no.	
P-5	none	Remove MAC mode.
	aa:bb:cc:dd:ee:ff	MAC address.
P-6	none	Remove ID mode.
	xx:xx:....:xx	Enter ID in hexadecimal format.
P-7	none	Remove ID mode.
	xx:xx:....:xx	Enter ID in hexadecimal format.
P-8	none	Remove ID mode.
	xx:xx:....:xx	Enter ID in hexadecimal format.
P-9	none	Remove relay mode.
	ipaddr	Enter IP address of the relay.
P-10	-1..4042	VLAN ID. A value of -1 corresponds to management vlan (the default), any other value (1-4042) represents a specific VLAN
P-11	infinite	Infinite leasetime.
	60..220752000	Leasetime in seconds.
P-12	tftp://<servername>/<file>	tftp://<servername>/<file> Configuration path; empty string ("") to clear value.
P-13	A.B.C.D	IP address.
P-14	A.B.C.D	IP address.
P-15	A.B.C.D	IP address.
P-16	A.B.C.D	IP address.
P-17	string	Enter a user-defined text, max. 64 characters.

■ no dhcp-server pool modify

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dhcp-server pool modify <P-1> first-ip last-ip mode interface mac clientid remoteid circuitid relay vlan leasetime option configpath gateway netmask wins dns hostname schneider electric-device

15.2.5 dhcp-server pool mode

Pool enable.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dhcp-server pool mode <P-1>

Parameter	Value	Meaning
P-1	1..128	Pool ID.

■ no dhcp-server pool mode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dhcp-server pool mode <P-1>

15.2.6 dhcp-server pool delete

Pool delete.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dhcp-server pool delete <P-1>

Parameter	Value	Meaning
P-1	1..128	Pool ID.

15.3 show

Display device options and settings.

15.3.1 show dhcp-server operation

Display the DHCP Server global information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dhcp-server operation

15.3.2 show dhcp-server pool

Display the DHCP Server pool entries.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-server pool [<P-1>]

Parameter	Value	Meaning
P-1	1..128	Pool ID.

15.3.3 show dhcp-server interface

Display the DHCP server information per interface.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-server interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

15.3.4 show dhcp-server lease

Display the DHCP server lease entries.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-server lease

16 DHCP Layer 2 Relay

16.1 dhcp-l2relay

Configure DHCP Layer 2 Relay.

16.1.1 dhcp-l2relay mode

Enables or disables DHCP Layer 2 Relay globally.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dhcp-l2relay mode

■ no dhcp-l2relay mode

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no dhcp-l2relay mode

16.2 dhcp-l2relay

Group of commands that configure DHCP Layer 2 Relay on existing VLANs.

16.2.1 dhcp-l2relay mode

Enables or disables DHCP Layer 2 Relay on a VLAN.

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dhcp-l2relay mode <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

■ no dhcp-l2relay mode

Disable the option

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no dhcp-l2relay mode <P-1>

16.2.2 dhcp-l2relay circuit-id

This commands enables setting the Option 82 Circuit ID in DHCP messages to an interface descriptor.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: dhcp-l2relay circuit-id <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

■ no dhcp-l2relay circuit-id

Disable the option

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dhcp-l2relay circuit-id <P-1>

16.2.3 dhcp-l2relay remote-id ip

Specifies the IP address of device as DHCP Option 82 Remote ID.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: dhcp-l2relay remote-id ip <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

16.2.4 dhcp-l2relay remote-id mac

Specifies the MAC address of device as DHCP Option 82 Remote ID.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: dhcp-l2relay remote-id mac <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

16.2.5 dhcp-l2relay remote-id client-id

Specifies the system name of device as DHCP Option 82 Remote ID.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: dhcp-l2relay remote-id client-id <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

16.2.6 dhcp-l2relay remote-id other

Allows you to specify the DHCP Option 82 Remote ID manually. If you omit the Remote ID, then only the Circuit ID is inserted into a relayed DHCP message.

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dhcp-l2relay remote-id other <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	<remote-id> Option 82 Remote ID

16.3 dhcp-l2relay

Configure DHCP Layer 2 Relay for an interface (list/range)

16.3.1 dhcp-l2relay mode

Enables or disables DHCP Layer 2 Relay on an interface.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** dhcp-l2relay mode
- no dhcp-l2relay mode
Disable the option
- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no dhcp-l2relay mode

16.3.2 dhcp-l2relay trust

This command configures an interface as trusted (typically connected to a DHCP server) or untrusted.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** dhcp-l2relay trust
- no dhcp-l2relay trust
Disable the option
- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no dhcp-l2relay trust

16.4 clear

Clear several items.

16.4.1 clear dhcp-l2relay statistics

This command clears the DHCP Layer 2 Relay statistics.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** clear dhcp-l2relay statistics

16.5 show

Display device options and settings.

16.5.1 show dhcp-l2relay global

This command displays the global DHCP Layer 2 Relay configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-l2relay global

16.5.2 show dhcp-l2relay statistics

This command displays interface statistics specific to DHCP Layer 2 Relay.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-l2relay statistics

16.5.3 show dhcp-l2relay interfaces

This command displays the DHCP Layer 2 Relay status of all interfaces.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-l2relay interfaces

16.5.4 show dhcp-l2relay vlan

This command displays the VLAN based DHCP Layer 2 Relay status.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dhcp-l2relay vlan

17 DHCP Snooping

17.1 ip

Set IP parameters.

17.1.1 ip dhcp-snooping verify-mac

If enabled verifies the source MAC address in the ethernet packet against the client hardware address in the received DHCP Message. If disabled does not perform this additional security check.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping verify-mac

■ no ip dhcp-snooping verify-mac

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip dhcp-snooping verify-mac

17.1.2 ip dhcp-snooping mode

Enable or disable DHCP Snooping.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping mode

■ no ip dhcp-snooping mode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip dhcp-snooping mode

17.1.3 ip dhcp-snooping database storage

This command specifies a location for the persistent DHCP Snooping bindings database. This can be a local file or a remote file on a given host.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping database storage <P-1>

Parameter	Value	Meaning
P-1	local	Save persistent DHCP Snooping bindings database to a local file.
	tftp-loc	Save persistent DHCP Snooping bindings database to a remote file: <tftp-loc> := tftp://<ip-addr>/<filename>.

17.1.4 ip dhcp-snooping database write-delay

This command configures the interval in seconds at which the DHCP Snooping binding database will be saved (persistent).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping database write-delay <P-1>

Parameter	Value	Meaning
P-1	15..86400	Interval in seconds at which the persistent DHCP Snooping binding database will be saved. The interval value ranges from 15 to 86400 seconds.

17.1.5 ip dhcp-snooping binding add

This command creates a new static DHCP Snooping binding (and optionally an associated dynamic IP Source Guard binding) between a MAC address and an IP address, for a specific VLAN at a particular interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping binding add <P-1> <P-2> <P-3> <P-4> [<P-5>]

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	A.B.C.D	IP address.
P-3	slot no./port no.	
P-4	1..4042	Enter the VLAN ID.
P-5	active	Activate the option.
	inactive	Inactivate the option.

17.1.6 ip dhcp-snooping binding delete all

This command deletes all static DHCP Snooping bindings (and optionally all associated dynamic IP Source Guard bindings) at all interfaces.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping binding delete all

17.1.7 ip dhcp-snooping binding delete interface

This command deletes all static DHCP Snooping bindings (and optionally all associated dynamic IP Source Guard bindings), associated with a particular interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping binding delete interface <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

17.1.8 ip dhcp-snooping binding delete mac

This command deletes one DHCP Snooping binding (and optionally the associated dynamic IP Source Guard binding), associated with a MAC address.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping binding delete mac <P-1>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.

17.1.9 ip dhcp-snooping binding mode

This command activates or deactivates a configured static DHCP Snooping binding, associated with a MAC address.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping binding mode <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	active	Activate the option.
	inactive	Inactivate the option.

17.2 clear

Clear several items.

17.2.1 clear ip dhcp-snooping bindings

This command clears all dynamic DHCP Snooping (and IP Source Guard) bindings on all interfaces or on a specific interface.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear ip dhcp-snooping bindings [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

17.2.2 clear ip dhcp-snooping statistics

This command clears the DHCP Snooping statistics.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear ip dhcp-snooping statistics

17.3 ip

IP commands.

17.3.1 ip dhcp-snooping mode

Enables or disables DHCP Snooping on a VLAN.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip dhcp-snooping mode <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

■ no ip dhcp-snooping mode

Disable the option

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip dhcp-snooping mode <P-1>

17.4 ip

IP interface commands.

17.4.1 ip dhcp-snooping trust

This command configures an interface as trusted (typically connected to a DHCP server) or un-trusted. DHCP Snooping forwards valid DHCP client messages on trusted interfaces. On un-trusted interfaces the application compares the receive interface with the clients interface in the binding database.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip dhcp-snooping trust

■ no ip dhcp-snooping trust

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no ip dhcp-snooping trust

17.4.2 ip dhcp-snooping log

This command configures an interface to log invalid DHCP messages, or not to log.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip dhcp-snooping log

■ no ip dhcp-snooping log

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no ip dhcp-snooping log

17.4.3 ip dhcp-snooping auto-disable

Enables or disables the auto-disable feature for an interface, applicable when the DHCP packet rate exceeds the limit.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip dhcp-snooping auto-disable

■ no ip dhcp-snooping auto-disable

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no ip dhcp-snooping auto-disable

17.4.4 ip dhcp-snooping limit

This command configures an interface for a maximum DHCP packet rate in a burst interval, or disables it. If the rate of DHCP packets exceed this limit in consecutive intervals then all further packets are dropped. If that happens and additionally the auto-disable feature is enabled, then the port is disabled automatically.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip dhcp-snooping limit <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	-1..150	Specifies the rate limit value (in packets per seconds, pps) for DHCP snooping purposes. The value -1 switches rate limiting off.
P-2	1..15	Specifies the burst interval value for DHCP snooping purposes. Because this parameter is optional it leaves unchanged if omitted.

17.5 show

Display device options and settings.

17.5.1 show ip dhcp-snooping global

This command displays the global DHCP Snooping configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip dhcp-snooping global

17.5.2 show ip dhcp-snooping statistics

This command displays statistics for DHCP Snooping security violations on untrusted ports.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip dhcp-snooping statistics

17.5.3 show ip dhcp-snooping interfaces

This command shows the DHCP Snooping status of all interfaces.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip dhcp-snooping interfaces

17.5.4 show ip dhcp-snooping vlan

This command displays the VLAN based DHCP Snooping status.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip dhcp-snooping vlan

17.5.5 show ip dhcp-snooping bindings

This command displays the DHCP Snooping binding entries from the static and/or dynamic bindings table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip dhcp-snooping bindings [<P-1>]
[interface <P-2>] [vlan <P-3>]

[interface]: Restrict the output based on a specific interface.

[vlan]: Restrict the output based on VLAN.

Parameter	Value	Meaning
P-1	static	Restrict the output based on static bindings.
	dynamic	Restrict the output based on dynamic bindings.
P-2	slot no./port no.	
P-3	1..4042	Enter the VLAN ID.

18 Domain Name System (DNS)

18.1 dns

Set DNS parameters.

18.1.1 dns cache adminstate

Enable or disable DNS cache.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns cache adminstate

■ no dns cache adminstate

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dns cache adminstate

18.1.2 dns cache flush

Flush the DNS cache.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns cache flush <P-1>

Parameter	Value	Meaning
P-1	action	Flush the DNS cache.

18.1.3 dns client adminstate

Enable or disable DNS Client.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client adminstate

■ no dns client adminstate

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dns client adminstate

18.1.4 dns client cache adminstate

Enable or disable DNS client cache.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client cache adminstate

■ no dns client cache adminstate

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dns client cache adminstate

18.1.5 dns client cache flush

Flush the DNS client cache.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client cache flush <P-1>

Parameter	Value	Meaning
P-1	action	Flush the DNS cache.

18.1.6 dns client domain-name

DNS Client default domain name.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client domain-name <P-1>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.

18.1.7 dns client host add

Add a new DNS client host entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client host add <P-1> name <P-2> ip <P-3>

name: Enter the DNS host name.

ip: Enter the DNS host address.

Parameter	Value	Meaning
P-1	1..64	DNS Client hosts index.
P-2	A.B.C.D	IP address.
P-3	A.B.C.D	IP address.

18.1.8 dns client host delete

Delete a DNS host entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client host delete <P-1>

Parameter	Value	Meaning
P-1	1..64	DNS Client hosts index.

18.1.9 dns client host modify

Modify a DNS client host entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client host modify <P-1> name <P-2> ip <P-3> status <P-4>

name: Enter the DNS host name.

ip: Enter the DNS host address.

status: Enter the status of the DNS host.

Parameter	Value	Meaning
P-1	1..64	DNS Client hosts index.
P-2	A.B.C.D	IP address.
P-3	A.B.C.D	IP address.
P-4	enable	Enable the option.
	disable	Disable the option.

18.1.10 dns client source

DNS Client configuration source.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client source <P-1>

Parameter	Value	Meaning
P-1	user	Use the DNS servers defined by the user.
	mgmt-dhcp	Use the DNS servers received by DHCP on the management interface.

18.1.11 dns client servers add

Add a new DNS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client servers add <P-1> ip <P-2>

ip: Enter the DNS server address.

Parameter	Value	Meaning
P-1	1..4	DNS Client servers index.

Parameter	Value	Meaning
P-2	A.B.C.D	IP address.

18.1.12 dns client servers delete

Delete a DNS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client servers delete <P-1>

Parameter	Value	Meaning
P-1	1..4	DNS Client servers index.

18.1.13 dns client servers modify

Modify a DNS server entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client servers modify <P-1> ip <P-2> status <P-3> operation <P-4>

ip: Change the DNS server address.

status: Change the status of this DNS server.

operation: Change the status of this DNS server.

Parameter	Value	Meaning
P-1	1..4	DNS Client servers index.
P-2	A.B.C.D	IP address.
P-3	enable	Enable the option.
	disable	Disable the option.
P-4	enable	Enable the option.
	disable	Disable the option.

18.1.14 dns client servers enable

Activate a DNS server entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client servers enable <P-1>

Parameter	Value	Meaning
P-1	1..4	DNS Client servers index.

18.1.15 dns client servers disable

Deactivate a DNS server entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client servers disable <P-1>

Parameter	Value	Meaning
P-1	1..4	DNS Client servers index.

18.1.16 dns client timeout

Set the timeout before retransmitting a request to the server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client timeout <P-1>

Parameter	Value	Meaning
P-1	0..3600	The timeout before retransmitting a request to the server (default: 3).

18.1.17 dns client retry

Set the number of times the request is retransmitted.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client retry <P-1>

Parameter	Value	Meaning
P-1	0..100	The number of times the request is retransmitted (default: 2).

18.2 show

Display device options and settings.

18.2.1 show dns client hosts

Display the DNS Client hosts table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dns client hosts

18.2.2 show dns client info

Display the DNS Client related information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dns client info

18.2.3 show dns client servers

Display the DNS Client servers.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dns client servers [<P-1>]

Parameter	Value	Meaning
P-1	extern	Display the DNS Client servers received from external sources.

19 DoS Mitigation

19.1 dos

Manage DoS Mitigation

19.1.1 dos tcp-null

Enables TCP Null scan protection - all TCP flags and TCP sequence number zero.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos tcp-null

■ no dos tcp-null

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos tcp-null

19.1.2 dos tcp-xmas

Enables TCP XMAS scan protection - TCP FIN, URG, PSH equal 1 and SEQ equals 0.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos tcp-xmas

■ no dos tcp-xmas

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos tcp-xmas

19.1.3 dos tcp-syn-fin

Enables TCP SYN/FIN scan protection - TCP with SYN and FIN flags set.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos tcp-syn-fin

- no dos tcp-syn-fin
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dos tcp-syn-fin

19.1.4 dos icmp-fragmented

Enables fragmented ICMP protection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos icmp-fragmented

- no dos icmp-fragmented
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dos icmp-fragmented

19.1.5 dos icmp payload-check

Enables ICMP max payload size protection for IPv4 and IPv6.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos icmp payload-check

- no dos icmp payload-check
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dos icmp payload-check

19.1.6 dos icmp payload-size

Configures maximum ICMP payload size (default: 512).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos icmp payload-size <P-1>

Parameter	Value	Meaning
P-1	0..1472	Max. ICMP payload size (default: 512)

19.1.7 dos ip-land

Enables LAND attack protection - source IP equals destination IP.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos ip-land <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the option.
	disable	Disable the option.

19.1.8 dos tcp-offset

Enables TCP offset check - ingress TCP packets with fragment offset 1 are dropped.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos tcp-offset

■ no dos tcp-offset

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos tcp-offset

19.1.9 dos tcp-syn

Enables TCP source port smaller than 1024 protection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos tcp-syn

■ no dos tcp-syn

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos tcp-syn

19.1.10 dos l4-port

Enables UDP or TCP source port equals destination port check.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos l4-port

■ no dos l4-port

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos l4-port

19.1.11 dos icmp-smurf-attack

Enables ICMP smurf attack protection check.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos icmp-smurf-attack

■ no dos icmp-smurf-attack

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos icmp-smurf-attack

19.2 show

Display device options and settings.

19.2.1 show dos

Display the DoS Mitigation parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dos

20 IEEE 802.1as (Dot1as - Timing and Synchronization)

20.1 dot1as

Enable or disable the IEEE Std 802.1AS protocol.

20.1.1 dot1as operation

Enable or disable the IEEE Std 802.1AS protocol.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as operation

■ no dot1as operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no dot1as operation

20.1.2 dot1as priority1

Configure the priority1 value (0..255) of the default data set.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as priority1 <P-1>

Parameter	Value	Meaning
P-1	0..255	Enter a number in the given range.

20.1.3 dot1as priority2

Configure the priority2 value (0..255) of the default data set.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as priority2 <P-1>

Parameter	Value	Meaning
P-1	0..255	Enter a number in the given range.

20.1.4 dot1as sync-lower-bound

Configure the lower bound for the PTP clock synchronization status in nanoseconds. If the absolute value of the offset to the master clock is smaller than the lower bound, clock's status is set to synchronized (true).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as sync-lower-bound <P-1>

Parameter	Value	Meaning
P-1	1..999999999	

20.1.5 dot1as sync-upper-bound

Configure the upper bound for the PTP clock synchronization status in nanoseconds. If the absolute value of the offset to the master clock is bigger than the upper bound, the clock's status is set to unsynchronized (false).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as sync-upper-bound <P-1>

Parameter	Value	Meaning
P-1	31..1000000000	

20.2 dot1as

Enable or disable 802.1as on a port.

20.2.1 dot1as operation

Enable or disable 802.1as on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as operation

■ no dot1as operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no dot1as operation

20.2.2 dot1as pdelay-threshold

Set the pDelay threshold in nano seconds (0..1000000000).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as pdelay-threshold <P-1>

Parameter	Value	Meaning
P-1	0..1000000000	The threshold for pdelay in [ns].

20.2.3 dot1as pdelay-interval

Configure the pDelay interval in seconds {1|2|4|8|disable}.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as pdelay-interval <P-1>

Parameter	Value	Meaning
P-1	1	Set the pdelay message transmission interval to 1s.
	2	Set the pdelay message transmission interval to 2s.
	4	Set the pdelay message transmission interval to 4s.
	8	Set the pdelay message transmission interval to 8s.
	disable	Disable the transmission of pdelay messages.

20.2.4 dot1as announce-interval

Configure the announce interval in seconds {1|2|disable}.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as announce-interval <P-1>

Parameter	Value	Meaning
P-1	1	Set the announce message transmission interval to 1s.
	2	Set the announce message transmission interval to 2s.
	disable	Disable the transmission of announce messages.

20.2.5 dot1as sync-interval

Configure the sync interval in seconds {0.25|0.5|1|disable}.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as sync-interval <P-1>

Parameter	Value	Meaning
P-1	0.125	Set the sync message transmission interval to 125ms.
	0.25	Set the sync message transmission interval to 250ms.
	0.5	Set the sync message transmission interval to 500ms.
	1	Set the sync message transmission interval to 1s.
	disable	Disable the transmission of sync messages.

20.2.6 dot1as announce-timeout

Configure the announce receipt timeout (2..10).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as announce-timeout <P-1>

Parameter	Value	Meaning
P-1	2..10	Define the number of allowed lost announce messages.

20.2.7 dot1as sync-timeout

Configure the sync receipt timeout (2..10).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as sync-timeout <P-1>

Parameter	Value	Meaning
P-1	2..10	Define the number of allowed lost sync messages.

20.2.8 dot1as pdelay-timeout

Configure the pDelay receipt timeout (2..10).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: dot1as pdelay-timeout <P-1>

Parameter	Value	Meaning
P-1	2..10	Define number of allowed lost pdelay messages.

20.3 show

Display device options and settings.

20.3.1 show dot1as

Show 802.1AS global status.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show dot1as [global] [default] [current] [parent] [time-properties] [port] [stats]
[global]: Show 802.1AS global status
[default]: Show 802.1AS default data set.
[current]: Show 802.1AS current data set.
[parent]: Show 802.1AS parent data set.
[time-properties]: Show 802.1AS time properties data set.
[port]: Show 802.1AS port data set.
[stats]: Show 802.1AS port statistics data set.

21 IEEE 802.1x (Dot1x - Port Based Network Access Control)

21.1 dot1x

Configure 802.1X parameters.

21.1.1 dot1x dynamic-vlan

Creates VLANs dynamically when a RADIUS-assigned VLAN does not exist.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x dynamic-vlan

■ no dot1x dynamic-vlan

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dot1x dynamic-vlan

21.1.2 dot1x system-auth-control

Enable or disable 802.1X authentication support on the switch.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x system-auth-control

■ no dot1x system-auth-control

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dot1x system-auth-control

21.1.3 dot1x monitor

Enable or disable 802.1X monitor mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x monitor

- no dot1x monitor
 - Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dot1x monitor

21.1.4 dot1x mac-authentication-bypass format group-size

Specify group-size for MAB.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x mac-authentication-bypass format group-size <P-1>

Parameter	Value	Meaning
P-1	1	
	2	
	4	
	12	

21.1.5 dot1x mac-authentication-bypass format group-separator

Specify group-separator for MAB.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x mac-authentication-bypass format group-separator <P-1>

Parameter	Value	Meaning
P-1	-	Use hyphen for MAB formatting.
	:	Use colon for MAB formatting.
	.	Use dot for MAB formatting.

21.1.6 dot1x mac-authentication-bypass format letter-case

Specify letter case for MAB.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x mac-authentication-bypass format letter-case <P-1>

Parameter	Value	Meaning
P-1	lower-case	Use lower-case for MAB formatting.
	upper-case	Use upper-case for MAB formatting.

21.1.7 dot1x mac-authentication-bypass password

Specify global password for MAB.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x mac-authentication-bypass password <P-1>

Parameter	Value	Meaning
P-1	string	<password> Enter a valid password for MAB.

21.2 dot1x

Configure 802.1X interface parameters.

21.2.1 dot1x guest-vlan

Configure a VLAN as 802.1X guest VLAN.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x guest-vlan <P-1>

Parameter	Value	Meaning
P-1	0..4042	Enter the VLAN ID. Entering of ID 0 disables the feature.

21.2.2 dot1x max-req

Configure the maximum number of requests to be sent.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x max-req <P-1>

Parameter	Value	Meaning
P-1	1..10	Maximum number of requests (default: 2).

21.2.3 dot1x max-users

Configure the maximum number of supplicants on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x max-users <P-1>

Parameter	Value	Meaning
P-1	1..16	Maximum number of supplicants on a port (default: 16).

21.2.4 dot1x mac-auth-bypass

Configure MAC-Authentication bypass for the port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x mac-auth-bypass

■ no dot1x mac-auth-bypass

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dot1x mac-auth-bypass

21.2.5 dot1x port-control

Set the authentication mode on the specified port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x port-control <P-1>

Parameter	Value	Meaning
P-1	auto	Port is actually controlled by protocol.
	force-authorized	Port is authorized unconditionally (default).
	force-unauthorized	Port is unauthorized unconditionally.
	multi-client	If more than one client is attached to the port, then each client needs to authenticate separately.

21.2.6 dot1x re-authentication

Enable or disable re-authentication for the given interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x re-authentication

■ no dot1x re-authentication

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dot1x re-authentication

21.2.7 dot1x unauthenticated-vlan

Configure a VLAN as 802.1X unauthenticated VLAN.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x unauthenticated-vlan <P-1>

Parameter	Value	Meaning
P-1	0..4042	Enter the VLAN ID. Entering of ID 0 disables the feature.

21.2.8 dot1x timeout guest-vlan-period

Configure the guest-vlan period value.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x timeout guest-vlan-period <P-1>

Parameter	Value	Meaning
P-1	1..300	Guest-vlan timeout in seconds (default: 90).

21.2.9 dot1x timeout reauth-period

Configure the re-authentication period.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x timeout reauth-period <P-1>

Parameter	Value	Meaning
P-1	1..65535	Timeout in seconds.

21.2.10 dot1x timeout quiet-period

Configure the quiet period value.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x timeout quiet-period <P-1>

Parameter	Value	Meaning
P-1	0..65535	Quiet period in seconds (default: 60).

21.2.11 dot1x timeout tx-period

Configure the transmit timeout period.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x timeout tx-period <P-1>

Parameter	Value	Meaning
P-1	1..65535	Timeout in seconds.

21.2.12 dot1x timeout supp-timeout

Configure the supplicant timeout period.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x timeout supp-timeout <P-1>

Parameter	Value	Meaning
P-1	1..65535	Timeout in seconds.

21.2.13 dot1x timeout server-timeout

Configure the server timeout period.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: dot1x timeout server-timeout <P-1>

Parameter	Value	Meaning
P-1	1..65535	Timeout in seconds.

21.2.14 dot1x initialize

Begins the initialization sequence on the specified port (port-control mode must be 'auto').

- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: dot1x initialize
- no dot1x initialize
Disable the option
- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dot1x initialize

21.2.15 dot1x re-authenticate

Begins the re-authentication sequence on the specified port (port-control mode must be 'auto').

- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: dot1x re-authenticate
- no dot1x re-authenticate
Disable the option
- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no dot1x re-authenticate

21.3 show

Display device options and settings.

21.3.1 show dot1x global

Display the global 802.1X configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dot1x global

21.3.2 show dot1x auth-history

Display the 802.1X authentication events and information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dot1x auth-history [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..4294967294	802.1X history log entry index. This can be specified only if interface is provided. Parameter Usage: [<slot/port> [index]]

21.3.3 show dot1x detail

Display the detailed 802.1X configuration for the specified port.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dot1x detail <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

21.3.4 show dot1x summary

Display the summary information about the 802.1X configuration for a specified port or all ports.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dot1x summary [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

21.3.5 show dot1x clients

Display the 802.1X client information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dot1x clients [<P-1>]

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.

21.3.6 show dot1x statistics

Display the 802.1X statistics for the specified port.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dot1x statistics <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

21.4 clear

Clear several items.

21.4.1 clear dot1x statistics port

Resets the 802.1X statistics for specified port.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear dot1x statistics port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

21.4.2 clear dot1x statistics all

Resets the 802.1X statistics for all ports.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear dot1x statistics all

21.4.3 clear dot1x auth-history port

Clears the 802.1X authentication history for specified port.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear dot1x auth-history port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

21.4.4 clear dot1x auth-history all

Clears the 802.1X authentication history for all ports.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** clear dot1x auth-history all

22 IEEE 802.3ad (Dot3ad - Link Aggregation)

22.1 link-aggregation

Configure 802.3ad link aggregation parameters to increase bandwidth and provide redundancy by combining connections.

22.1.1 link-aggregation add

Create a new Link Aggregation Group to increase bandwidth and provide link redundancy. If desired, enter a name up to 15 alphanumeric characters in length.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-aggregation add <P-1>

Parameter	Value	Meaning
P-1	llag/<lagport>	lag/<lagport> Enter a lag interface in lag/lagport format.

22.1.2 link-aggregation modify

Modify the parameters for the specified Link Aggregation Group.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-aggregation modify <P-1> name <P-2> addport <P-3> deleteport <P-4> adminmode linktrap static min-links <P-5>

name: Modify the name of the specified Link Aggregation Group.

addport: Add the specified port to the Link Aggregation Group.

deleteport: Delete the specified port from the Link Aggregation Group.

adminmode: Modify the administration mode of the specified Link Aggregation Group. To activate the group, enable the administration mode.

linktrap: Enable/Disable link trap notifications for the specified Link Aggregation Group

static: Enable or disable static capability for the specified Link Aggregation Group on a device. When enabled, LACP automatically helps prevent loops and allows non-link aggregation partners to support LACP.

min-links: Set the minimum links for the specified Link Aggregation Group.

Parameter	Value	Meaning
P-1	slot no./port no.	

Parameter	Value	Meaning
P-2	string	Enter a user-defined text, max. 15 characters.
P-3	slot no./port no.	
P-4	slot no./port no.	
P-5	slot no./port no.	

■ no link-aggregation modify

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no link-aggregation modify <P-1> name addport deleteport adminmode linktrap static min-links

22.1.3 link-aggregation delete

Delete the Link Aggregation Group to divide the group into individual connections.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-aggregation delete <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

22.2 lacp

Configure lacp parameters.

22.2.1 lacp admin-key

Configure the administrative value of the key on this LAG.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp admin-key <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.2 lacp collector-max-delay

Configure the collector max delay on this LAG (default is 0).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp collector-max-delay <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.3 lacp lacpmode

Activate/deactivate LACP on an interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp lacpmode

■ no lacp lacpmode

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lacp lacpmode

22.2.4 lacp actor admin key

Configure the value of the LACP actor admin key on this port (default 0).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp actor admin key <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.5 lacp actor admin state lacp-activity

Enable/disable the LACP activity on the actor admin state.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp actor admin state lacp-activity

■ no lacp actor admin state lacp-activity

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lacp actor admin state lacp-activity

22.2.6 lacp actor admin state lacp-timeout

Enable/disable the LACP timeout on the actor admin state.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp actor admin state lacp-timeout

- no lacp actor admin state lacp-timeout
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lacp actor admin state lacp-timeout

22.2.7 lacp actor admin state aggregation

Enable/disable the aggregation on the actor admin state.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp actor admin state aggregation

- no lacp actor admin state aggregation
Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lacp actor admin state aggregation

22.2.8 lacp actor admin port priority

Set LACP actor port priority value (default 128).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp actor admin port priority <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.9 lacp partner admin key

Configure the administrative value of the LACP key for the protocol partner on this LAG (default 0).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin key <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.10 lacp partner admin state lacp-activity

Enable/disable the LACP activity on the partner admin state.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin state lacp-activity

- no lacp partner admin state lacp-activity
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lacp partner admin state lacp-activity

22.2.11 lacp partner admin state lacp-timeout

Enable/disable the LACP timeout on the partner admin state.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin state lacp-timeout

- no lacp partner admin state lacp-timeout

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lacp partner admin state lacp-timeout

22.2.12 lacp partner admin state aggregation

Enable/disable the state aggregation on the partner admin state.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin state aggregation

- no lacp partner admin state aggregation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lacp partner admin state aggregation

22.2.13 lacp partner admin port priority

Set LACP partner port priority value (default 128).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin port priority <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.14 lacp partner admin port id

Set LACP partner port value (default 0).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin port id <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.15 lacp partner admin system-priority

Configure the partner system priority.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin system-priority <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a number between 0 and 65535

22.2.16 lacp partner admin system-id

Configure the MAC address representing the administrative value of the LAG ports protocol partner system ID default (00:00:00:00:00:00).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lacp partner admin system-id <P-1>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.

22.3 show

Display device options and settings.

22.3.1 show link-aggregation port

Display the LAG configuration of a single port.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show link-aggregation port [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.2 show link-aggregation statistics

Display the ports LAG statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show link-aggregation statistics [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.3 show link-aggregation members

Display the member ports for the specified LAG.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show link-aggregation members <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.4 show lacp interface

Display the LAG interfaces attributes.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lacp interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.5 show lacp mode

Display the LACP mode.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lacp mode [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.6 show lacp actor

Display the Link Aggregation control protocol actor attributes.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lacp actor [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.7 show lacp partner operational

Display the Link Aggregation control protocol operational partner attributes.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lacp partner operational [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

22.3.8 show lacp partner admin

Display the Link Aggregation control protocol administrative partner attributes.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lacp partner admin [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

23 Ethernet IP

23.1 ethernet-ip

Enable or disable the EtherNet/IP operation on this device. If disabled, the EtherNet/IP protocol is deactivated, but the EtherNet/IP MIBs can be accessed.

23.1.1 ethernet-ip operation

Enable or disable the EtherNet/IP operation on this device. If disabled, the EtherNet/IP protocol is deactivated, but the EtherNet/IP MIBs can be accessed.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ethernet-ip operation

■ no ethernet-ip operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no ethernet-ip operation

23.1.2 ethernet-ip vlan-id

Set the EtherNet/IP VLAN on this device.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ethernet-ip vlan-id <P-1>

Parameter	Value	Meaning
P-1	xxx_hmcliEnip_VLAN ID_List	???

23.1.3 ethernet-ip write-access

Enable or disable the write-access of the EtherNet/IP protocol (possible security risk, as EtherNet/IP communication is not authenticated).

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ethernet-ip write-access

- no ethernet-ip write-access
 - Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no ethernet-ip write-access

23.2 show

Display device options and settings.

23.2.1 show ethernet-ip

Display the EtherNet/IP settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ethernet-ip

23.3 copy

Copy different kinds of items.

23.3.1 copy eds-ethernet-ip system remote

Copy the EDS file from the device to a file server

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eds-ethernet-ip system remote <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

23.3.2 copy eds-ethernet-ip system envm

Copy the EDS file from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eds-ethernet-ip system envm

24 Filtering Database (FDB)

24.1 mac-filter

24.1.1 mac-filter

Static MAC filter configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac-filter <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	1..4042	Enter the VLAN ID.

■ no mac-filter

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac-filter <P-1> <P-2>

24.2 bridge

Bridge configuration.

24.2.1 bridge aging-time

Aging time configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: bridge aging-time <P-1>

Parameter	Value	Meaning
P-1	10..500000	Enter a number in the given range.

24.3 show

Display device options and settings.

24.3.1 show mac-filter-table static

Display the MAC address filter table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mac-filter-table static

24.4 show

Display device options and settings.

24.4.1 show bridge aging-time

Address aging time.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show bridge aging-time

24.5 show

Display device options and settings.

24.5.1 show mac-addr-table

Display the MAC address table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mac-addr-table [<P-1>]

Parameter	Value	Meaning
P-1	a:b:c:d:e:f	Enter a MAC address.
	1..4042	Enter a VLAN ID.

24.6 clear

Clear several items.

24.6.1 clear mac-addr-table

Clears the MAC address table.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear mac-addr-table

25 GARP VLAN and Multicast Registration Protocol (GVRP and GMRP)

25.1 garp

Configure GARP protocols, GVRP for dynamic VLAN registration and GMRP for dynamic MAC registration.

25.1.1 garp gvrp operation

Enable or disable GVRP globally. When enabled, the device distributes VLAN membership information on GVRP enable active ports. GVRP-aware devices use the information to dynamically create VLAN members and update the local VLAN member database.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `garp gvrp operation`

■ no garp gvrp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `no garp gvrp operation`

25.1.2 garp gmrp operation

Enable or disable GMRP globally. Devices use GMRP information for dynamic registration of group membership and individual MAC addresses with end devices and switches that support extended filtering services, within the connected LAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `garp gmrp operation`

■ no garp gmrp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `no garp gmrp operation`

25.1.3 garp gmrp forward-unknown

Configure if unknown multicast packets are forwarded. The setting can be discard or flood.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `garp gmrp forward-unknown <P-1>`

Parameter	Value	Meaning
P-1	flood	Unknown multicast frames will be flooded.
	discard	Unknown multicast frames will be discarded.

25.2 garp

Configure GARP parameters and protocols, GVRP for dynamic VLAN registration and GMRP for dynamic MAC registration on a port.

25.2.1 garp interface join-time

Set the GARP join time-interval. The join timer controls the interval between join message transmissions sent to applicant state machines. An instance of this timer is required on a per-Port, per-GARP participant basis.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `garp interface join-time <P-1>`

Parameter	Value	Meaning
P-1	10..100	Join time-interval in centiseconds.

25.2.2 garp interface leave-time

Set the GARP leave time-interval. The leave timer controls the period of time that the registrar state machine waits in the leave state before transiting to the empty state. An instance of the timer is required for each state machine in the leave state.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `garp interface leave-time <P-1>`

Parameter	Value	Meaning
P-1	20..600	Leave time-interval in centiseconds.

25.2.3 garp interface leave-all-time

Set the GARP leave-all time-interval. The leave all timer controls the frequency with which the leaveall state machine generates leaveall PDUs. The timer is required on a per-Port, per-GARP Participant basis.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `garp interface leave-all-time <P-1>`

Parameter	Value	Meaning
P-1	200..6000	Leave-All time-interval in centiseconds.

25.2.4 garp gvrp operation

Enable or disable GVRP on the port. When enabled, globally and on this port, the device distributes VLAN membership information to GVRP aware devices connected to this port.

- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: `garp gvrp operation`
- no garp gvrp operation
Disable the option
- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: `no garp gvrp operation`

25.2.5 garp gmrp operation

Enable or disable GMRP on the interface, with GMRP enabled globally and on this interface, the device sends and receives GMRP messages on this port.

- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: `garp gmrp operation`
- no garp gmrp operation
Disable the option
- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: `no garp gmrp operation`

25.2.6 garp gmrp forward-all-groups

Configure forward-all behavior for GMRP on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `garp gmrp forward-all-groups`

- no garp gmrp forward-all-groups
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no garp gmrp forward-all-groups

25.3 show

Display device options and settings.

25.3.1 show garp interface

Display the global configuration of GARP per interface.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show garp interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

25.3.2 show garp gvrp global

Display the GVRP global configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show garp gvrp global

25.3.3 show garp gvrp interface

Display the GVRP interface configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show garp gvrp interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

25.3.4 show garp gvrp statistics interface

Display the GVRP interface statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show garp gvrp statistics interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

25.3.5 show garp gmrp global

Display the GMRP global configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show garp gmrp global

25.3.6 show garp gmrp interface

Display the GMRP interface configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show garp gmrp interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

25.3.7 show garp gmrp statistics interface

Display the GMRP interface statistics.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show garp gmrp statistics interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

25.4 show

Display device options and settings.

25.4.1 show mac-filter-table gmrp

Display the GMRP entries in the MFDB table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mac-filter-table gmrp

26 Ethernet Switch Configurator

26.1 network

Configure the inband and outband connectivity.

26.1.1 network ethernet-switch-conf operation

Enable/disable the Ethernet Switch Configurator protocol on this device.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ethernet-switch-conf operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the Ethernet Switch Configurator protocol.
	disable	Disable the Ethernet Switch Configurator protocol.

■ no network ethernet-switch-conf operation

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: no network ethernet-switch-conf operation <P-1>

26.1.2 network ethernet-switch-conf mode

Set the access level for Ethernet Switch Configurator.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ethernet-switch-conf mode <P-1>

Parameter	Value	Meaning
P-1	read-write	Allow detection and configuration.
	read-only	Allow only detection, no configuration.

26.1.3 network ethernet-switch-conf blinking

Enable/disable the Ethernet Switch Configurator blinking sequence on this device. This preference is not saved in configuration

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ethernet-switch-conf blinking

- no network ethernet-switch-conf blinking

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: no network ethernet-switch-conf blinking

26.2 show

Display device options and settings.

26.2.1 show network ethernet-switch-conf

Display the Ethernet Switch Configurator settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network ethernet-switch-conf

27 HIPER-Ring

27.1 hiper-ring

Configure the HIPER Ring settings.

27.1.1 hiper-ring operation

Enable or disable the HIPER Ring operation.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: hiper-ring operation

- no hiper-ring operation
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no hiper-ring operation

27.1.2 hiper-ring mode

Configure the HIPER Ring mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: hiper-ring mode <P-1>

Parameter	Value	Meaning
P-1	client	The device will be in the role of a ring client (ring-switch).

27.1.3 hiper-ring primary-port

Configure the primary ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: hiper-ring primary-port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

27.1.4 hiper-ring secondary-port

Configure the secondary ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: hiper-ring secondary-port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

27.2 show

Display device options and settings.

27.2.1 show hiper-ring global

Display the HIPER Ring global information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show hiper-ring global

28 Hypertext Transfer Protocol (HTTP)

28.1 http

Set HTTP parameters.

28.1.1 http port

Set the HTTP port number.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: http port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the HTTP server (default: 80).

28.1.2 http server

Enable or disable the HTTP server.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: http server
-
- no http server
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no http server

28.2 show

Display device options and settings.

28.2.1 show http

Display the HTTP server information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show http

29 HTTP Secure (HTTPS)

29.1 https

Set HTTPS parameters.

29.1.1 https server

Enable or disable the HTTPS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https server

■ no https server

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no https server

29.1.2 https port

Set the HTTPS port number.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the web server (default: 443).

29.1.3 https fingerprint-type

Configure fingerprint type.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https fingerprint-type <P-1>

Parameter	Value	Meaning
P-1	sha1	Configure sha1 fingerprint
	sha256	Configure sha256 fingerprint

29.1.4 https certificate

Generate/Delete HTTPS X509/PEM certificate.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https certificate <P-1>

Parameter	Value	Meaning
P-1	generate	Generates the item
	delete	Deletes the item

29.2 copy

Copy different kinds of items.

29.2.1 copy httpscert remote

Copy X509/PEM certificate from a server to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy httpscert remote <P-1> nvm

nvm: Copy HTTPS certificate (PEM) from a server to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

29.3 show

Display device options and settings.

29.3.1 show https

Display the HTTPS server information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show https

30 Integrated Authentication Server (IAS)

30.1 ias-users

Manage IAS Users and User Accounts.

30.1.1 ias-users add

Add a new IAS user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ias-users add <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

30.1.2 ias-users delete

Delete an existing IAS user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ias-users delete <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

30.1.3 ias-users enable

Enable IAS user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ias-users enable <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

30.1.4 ias-users disable

Disable IAS user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ias-users disable <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

30.1.5 ias-users password

Change IAS user password.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** ias-users password <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	string	Enter a user-defined text, max. 64 characters.

30.2 show

Display device options and settings.

30.2.1 show ias-users

Display the IAS users and user accounts information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show ias-users

31 IEC 61850 MMS Server

31.1 iec61850-mms

Configure the IEC61850 MMS Server settings.

31.1.1 iec61850-mms operation

Enable or disable the IEC61850 MMS Server. The MMS server facilitates real-time distribution of data and supervisory control functions for substations.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: iec61850-mms operation

■ no iec61850-mms operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no iec61850-mms operation

31.1.2 iec61850-mms write-access

Enable or disable the Write-Access on IEC61850 bridge objects via MMS. Write services allow the MMS client to access application content. - Possible security risk, as MMS communication is not authenticated -

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: iec61850-mms write-access

■ no iec61850-mms write-access

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no iec61850-mms write-access

31.1.3 iec61850-mms port

Defines the port number of the IEC61850 MMS server (default: 102).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: iec61850-mms port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the IEC61850 MMS server (default: 102).

31.1.4 iec61850-mms max-sessions

Defines the maximum number of concurrent IEC61850 MMS sessions (default: 5).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `iec61850-mms max-sessions <P-1>`

Parameter	Value	Meaning
P-1	1..15	Maximum number of concurrent IEC61850 MMS sessions (default: 5).

31.1.5 iec61850-mms technical-key

Defines the IEC61850 MMS Technical Key (default: KEY).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `iec61850-mms technical-key <P-1>`

Parameter	Value	Meaning
P-1	string	Enter a IEC61850-7-2 Ed. VisibleString, max. 32 characters. The following characters are allowed: VisibleString (FROM ('A' 'a' 'B' 'b' 'C' 'c' 'D' 'd' 'E' 'e' 'F' 'f' 'G' 'g' 'H' 'h' 'I' 'i' 'J' 'j' 'K' 'k' 'L' 'l' 'M' 'm' 'N' 'n' 'O' 'o' 'P' 'p' 'Q' 'q' 'R' 'r' 'S' 's' 'T' 't' 'U' 'u' 'V' 'v' 'W' 'w' 'X' 'x' 'Y' 'y' 'Z' 'z' '_' '0' '1' '2' '3' '4' '5' '6' '7' '8' '9')

31.2 show

Display device options and settings.

31.2.1 show iec61850-mms

Display the IEC61850 MMS server settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show iec61850-mms`

32 IGMP Snooping

32.1 igmp-snooping

Configure IGMP snooping.

32.1.1 igmp-snooping mode

Enable or disable IGMP snooping.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping mode

■ no igmp-snooping mode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no igmp-snooping mode

32.1.2 igmp-snooping querier mode

Enable or disable IGMP snooping querier on the system.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping querier mode

■ no igmp-snooping querier mode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no igmp-snooping querier mode

32.1.3 igmp-snooping querier query-interval

Sets the IGMP querier query interval time (1-1800) in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping querier query-interval <P-1>

Parameter	Value	Meaning
P-1	1..1800	Enter a number in the given range.

32.1.4 igmp-snooping querier timer-expiry

Sets the IGMP querier timer expiration period (60-300) in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping querier timer-expiry <P-1>

Parameter	Value	Meaning
P-1	60..300	Enter a number in the given range.

32.1.5 igmp-snooping querier version

Sets the IGMP version (1-3) of the query.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping querier version <P-1>

Parameter	Value	Meaning
P-1	1..3	IGMP snooping querier's protocol version(1 to 3,default: 2).

32.1.6 igmp-snooping forward-unknown

Configure if and how unknown multicasts are forwarded.The setting can be discard, flood or query-ports.The default is flood.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping forward-unknown <P-1>

Parameter	Value	Meaning
P-1	discard	Unknown multicast frames will be discarded.
	flood	Unknown multicast frames will be flooded.

32.2 igmp-snooping

Configure IGMP snooping.

32.2.1 igmp-snooping vlan-id

Configure the VLAN parameters.

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping vlan-id <P-1> mode fast-leave groupmembership-interval <P-2> maxresponse <P-3> mcrtr_expiretime <P-4> querier mode address <P-5> forward-known <P-6> forward-all <P-7> static-query-port <P-8> automatic-mode <P-9>

mode: Enable or disable IGMP snooping per VLAN.
fast-leave: Enable or disable IGMP snooping fast-leave per VLAN.
groupmembership-interval: Set IGMP group membership interval time (2-3600) in seconds per VLAN.
maxresponse: Set the igmp maximum response time (1-25) in seconds per VLAN.
mcrtrexpiretime: Sets the multicast router present expiration time (0-3600) in seconds per VLAN.
querier: Set IGMP snooping querier on the system.
mode: Enable or disable IGMP snooping querier per VLAN.
address: Set IGMP snooping querier address on the system using a VLAN.
forward-known: Sets the mode how known multicast packets will be treated. The default value is registered-ports-only(2).
forward-all: Enable or disable IGMP snooping forward-all.
static-query-port: Enable or disable IGMP snooping static-query-port.
automatic-mode: Enable or disable IGMP snooping automatic-mode.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	2..3600	Enter a number in the given range.
P-3	1..25	Enter a number in the given range.
P-4	0..3600	Enter a number in the given range.
P-5	A.B.C.D	IP address.
P-6	query-and-registered-ports	Addition of query ports to multicast filter portmasks.
	registered-ports-only	No addition of query ports to multicast filter portmasks.
P-7	slot no./port no.	
P-8	slot no./port no.	
P-9	slot no./port no.	

■ no igmp-snooping vlan-id

Disable the option

▶ **Mode:** VLAN Database Mode

▶ **Privilege Level:** Operator

▶ **Format:** no igmp-snooping vlan-id <P-1> mode fast-leave groupmembership-interval maxresponse mcrtrexpiretime querier mode address forward-known forward-all <P-7> static-query-port <P-8> automatic-mode <P-9>

32.3 igmp-snooping

Configure IGMP snooping.

32.3.1 igmp-snooping mode

Enable or disable IGMP snooping per interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping mode

■ no igmp-snooping mode

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no igmp-snooping mode

32.3.2 igmp-snooping fast-leave

Enable or disable IGMP snooping fast-leave per interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping fast-leave

■ no igmp-snooping fast-leave

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no igmp-snooping fast-leave

32.3.3 igmp-snooping groupmembership-interval

Set IGMP group membership interval time (2-3600) in seconds per interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping groupmembership-interval <P-1>

Parameter	Value	Meaning
P-1	2..3600	Enter a number in the given range.

32.3.4 igmp-snooping maxresponse

Set the igmp maximum response time (1-25) in seconds per interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: igmp-snooping maxresponse <P-1>

Parameter	Value	Meaning
P-1	1..25	Enter a number in the given range.

32.3.5 igmp-snooping mcrtrexpiretime

Sets the multicast router present expiration time (0-3600) in seconds per interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** igmp-snooping mcrtrexpiretime <P-1>

Parameter	Value	Meaning
P-1	0..3600	Enter a number in the given range.

32.3.6 igmp-snooping static-query-port

Configures the interface as a static query interface in all VLANs.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** igmp-snooping static-query-port

■ no igmp-snooping static-query-port

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no igmp-snooping static-query-port

32.4 show

Display device options and settings.

32.4.1 show igmp-snooping global

Display the IGMP snooping global information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show igmp-snooping global

32.4.2 show igmp-snooping interface

Display the IGMP snooping interface information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show igmp-snooping interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

32.4.3 show igmp-snooping vlan

Display the IGMP snooping VLAN information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show igmp-snooping vlan [<P-1>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

32.4.4 show igmp-snooping querier global

Display the IGMP snooping querier information per VLAN.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show igmp-snooping querier global

32.4.5 show igmp-snooping querier vlan

Display the IGMP snooping querier VLAN information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show igmp-snooping querier vlan [<P-1>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

32.4.6 show igmp-snooping enhancements vlan

Display the IGMP snooping VLAN information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show igmp-snooping enhancements vlan [<P-1>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

32.4.7 show igmp-snooping enhancements unknown-filtering

Display the unknown multicast filtering information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show igmp-snooping enhancements unknown-filtering

32.4.8 show igmp-snooping statistics global

Display the number of control packets processed by CPU.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show igmp-snooping statistics global

32.4.9 show igmp-snooping statistics interface

Display the number of control packets processed by CPU per interface.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show igmp-snooping statistics interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

32.5 show

Display device options and settings.

32.5.1 show mac-filter-table igmp-snooping

Display the IGMP snooping entries in the MFDB table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mac-filter-table igmp-snooping

32.6 clear

Clear several items.

32.6.1 clear igmp-snooping

Clear all IGMP snooping entries.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** clear igmp-snooping

33 Interface

33.1 shutdown

33.1.1 shutdown

Enable or disable the interface.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** shutdown
-
- **no shutdown**
Disable the option
 - ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no shutdown

33.2 auto-negotiate

33.2.1 auto-negotiate

Enable or disable automatic negotiation on the interface. The cable crossing settings have no effect if auto-negotiation is enabled. In this case cable crossing is always set to auto. Cable crossing is set to the value chosen by the user if auto-negotiation is disabled.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** auto-negotiate
-
- **no auto-negotiate**
Disable the option
 - ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no auto-negotiate

33.3 auto-power-down

33.3.1 auto-power-down

Set the auto-power-down mode on the interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** auto-power-down <P-1>

Parameter	Value	Meaning
P-1	auto-power-save	The port goes in a low power mode.
	no-power-save	The port does not use the automatic power save mode.

33.4 cable-crossing

33.4.1 cable-crossing

Cable crossing settings on the interface. The cable crossing settings have no effect if auto-negotiation is enabled. In this case cable crossing is always set to auto. Cable crossing is set to the value chosen by the user if auto-negotiation is disabled.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** cable-crossing <P-1>

Parameter	Value	Meaning
P-1	mdi	The port does not use the crossover mode.
	mdix	The port uses the crossover mode.
	auto-mdix	The port uses the auto crossover mode.

33.5 linktraps

33.5.1 linktraps

Enable/disable link up/down traps on the interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** linktraps

- no linktraps
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no linktraps

33.6 link-loss-alert

Configure Link Loss Alert on the interface.

33.6.1 link-loss-alert operation

Enable or disable Link Loss Alert on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-loss-alert operation

- no link-loss-alert operation
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no link-loss-alert operation

33.7 speed

33.7.1 speed

Sets the speed and duplex setting for the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: speed <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	10	10 MBit/s.
	100	100 MBit/s.
	1000	1000 MBit/s.
P-2	full	full duplex.
	half	half duplex.

33.8 name

33.8.1 name

Set or remove a descriptive name for the interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** name <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 64 characters.

33.9 power-state

33.9.1 power-state

Enable or disable the power state on the interface. The interface power state settings have no effect if the interface admin state is enabled.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** power-state
- no power-state
Disable the option
- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no power-state

33.10 mac-filter

33.10.1 mac-filter

static mac filter configuration

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** mac-filter <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	1..4042	Enter the VLAN ID.

- no mac-filter
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no mac-filter <P-1> <P-2>

33.11 led-signaling

Enable or disable Port LED signaling.

33.11.1 led-signaling operation

Enable or disable Port LED signaling.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: led-signaling operation

- no led-signaling operation
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no led-signaling operation

33.12 show

Display device options and settings.

33.12.1 show port

Display the interface parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

33.13 show

Display device options and settings.

33.13.1 show link-loss-alert

Display the link-loss-alert parameters.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show link-loss-alert [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

33.14 show

Display device options and settings.

33.14.1 show led-signaling operation

Display the port LED signaling operation.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show led-signaling operation

34 Interface Statistics

34.1 utilization

Configure the interface utilization parameters.

34.1.1 utilization control-interval

Add interval time to monitor the bandwidth utilization of the interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** utilization control-interval <P-1>

Parameter	Value	Meaning
P-1	1..3600	Add interval time to monitor the bandwidth utilization.

34.1.2 utilization alarm-threshold lower

Lower threshold value

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** utilization alarm-threshold lower <P-1>

Parameter	Value	Meaning
P-1	0..10000	Add alarm threshold lower value for monitoring bandwidth utilization in hundredths of a percent.

34.1.3 utilization alarm-threshold upper

Upper threshold value

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** utilization alarm-threshold upper <P-1>

Parameter	Value	Meaning
P-1	0..10000	Add alarm threshold upper value for monitoring bandwidth utilization in hundredths of a percent.

34.2 clear

Clear several items.

34.2.1 clear port-statistics

Clear all statistics counter.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear port-statistics

34.3 show

Display device options and settings.

34.3.1 show interface counters

Display the interface counters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show interface counters

34.3.2 show interface utilization

Display the interface utilization.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show interface utilization [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

34.3.3 show interface statistics

Display the summary interface statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show interface statistics [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

34.3.4 show interface ether-stats

Display the detailed interface statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show interface ether-stats [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

35 Intern

35.1 help

Display the help text for various special keys.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** help

35.2 logout

Exit this session.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** any
- ▶ **Format:** logout

35.3 history

Display a list of previously run commands.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** history

35.4 vlan

Enter VLAN database mode.

35.4.1 vlan database

Enter VLAN database mode.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** vlan database

35.5 vlan-mode

35.5.1 vlan-mode

Enter VLAN Configuration Mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `vlan-mode <P-1>`

Parameter	Value	Meaning
P-1	all	Select all VLAN configured.
	vlan	Enter single VLAN.
	vlan range	Enter VLAN range separated by hyphen e.g 1-4.
	vlan list	Enter VLAN list separated by comma e.g 2,4,6,... .
	complex range	Enter VLAN range and several VLAN separated by comma for a list and hyphen for ranges e.g 2-4,6-9,11.

35.6 exit

Exit from vlan mode.

- ▶ Mode: VLAN Mode
- ▶ Privilege Level: Operator
- ▶ Format: `exit`

35.7 end

Exit to exec mode.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `end`

35.8 serviceshell

Enter system mode.

35.8.1 serviceshell start

Start serviceshell prompt

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: serviceshell start

35.8.2 serviceshell debug

Additional service functions.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: serviceshell debug <P-1>

Parameter	Value	Meaning
P-1	switch	Start switch debug shell
	osapi-debug	Start osapi debug functions.

35.8.3 serviceshell deactivate

Disable the service shell access permanently (Cannot be undone).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: serviceshell deactivate

35.9 traceroute

Trace route to a specified host.

35.9.1 traceroute maxttl

Set max TTL value.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: traceroute <P-1> maxttl <P-2> [initttl <P-3>] [interval <P-4>] [count <P-5>] [size <P-6>] [port <P-7>]

[initttl]: Initial TTL value.

[interval]: Timeout until probe failure.

[count]: Number of probes for each TTL.

[size]: Size of payload in bytes.

[port]: UDP destination port.

Parameter	Value	Meaning
P-1	xxx_hmclilnetAddrDy namicEnum_inetaddr	???
P-2	1..255	Enter a number in the given range.

Parameter	Value	Meaning
P-3	0..255	Enter a number in the given range.
P-4	1..60	Enter a number in the given range.
P-5	1..10	Enter a number in the given range.
P-6	0..65507	Enter a number in the given range.
P-7	1..65535	Enter port number between 1 and 65535

35.10 reboot

Reset the device (cold start).

35.10.1 reboot after

Schedule reboot after specified time.

- ▶ Mode: All Privileged Modes
- ▶ Privilege Level: any
- ▶ Format: reboot after <P-1>

Parameter	Value	Meaning
P-1	0..2147483	Enter Seconds Between 0 to 2147483. Setting 0 will clear scheduled Reboot if configured.

35.11 ping

Send ICMP echo packets to a specified IP address.

35.11.1 ping count

Number of retries.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: ping <P-1> count <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..255	Enter a number in the given range.

35.12 show

Display device options and settings.

35.12.1 show reboot

Display the configured reboot in seconds.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show reboot

35.12.2 show serviceshell

Display the service shell access.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show serviceshell

36 Digital IO Module

36.1 digital-input

Digital Input related configuration.

36.1.1 digital-input admin-state

Enable or disable the polling for digital inputs.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: digital-input admin-state

■ no digital-input admin-state

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no digital-input admin-state

36.1.2 digital-input refresh-interval

Set refresh interval in milliseconds for digital inputs.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: digital-input refresh-interval <P-1>

Parameter	Value	Meaning
P-1	1000..10000	Refresh interval in milliseconds.

36.1.3 digital-input log-event io

Configure a single IO port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: digital-input log-event io <P-1>

Parameter	Value	Meaning
P-1	MU/input	Enter a Digital IO input on the power supply module in MU/input format.

■ no digital-input log-event io

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no digital-input log-event io <P-1>

36.1.4 digital-input log-event all

Configure all IO ports.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: digital-input log-event all

■ no digital-input log-event all

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no digital-input log-event all

36.1.5 digital-input snmp-trap io

Configure a single IO port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: digital-input snmp-trap io <P-1>

Parameter	Value	Meaning
P-1	MU/input	Enter a Digital IO input on the power supply module in MU/input format.

■ no digital-input snmp-trap io

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no digital-input snmp-trap io <P-1>

36.1.6 digital-input snmp-trap all

Configure all IO ports.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: digital-input snmp-trap all

■ no digital-input snmp-trap all

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no digital-input snmp-trap all

36.2 show

Display device options and settings.

36.2.1 show digital-input config

Display the global information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show digital-input config

36.2.2 show digital-input io

Display the details about a single IO input port.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show digital-input io

37 IP Source Guard (IPSG)

37.1 ip

Set IP parameters.

37.1.1 ip source-guard binding add

This command creates a new static IPSG binding between a MAC address and an IP address, for a specific VLAN at a particular interface.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip source-guard binding add <P-1> <P-2> <P-3> <P-4> [<P-5>]

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	A.B.C.D	IP address.
P-3	slot no./port no.	
P-4	1..4042	Enter the VLAN ID.
P-5	active	Activate the option.
	inactive	Inactivate the option.

37.1.2 ip source-guard binding delete all

This command deletes all static IP Source Guard (IPSG) bindings (at all interfaces).

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip source-guard binding delete all

37.1.3 ip source-guard binding delete interface

This command deletes all static IP Source Guard (IPSG) bindings, associated with a particular interface.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip source-guard binding delete interface <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

37.1.4 ip source-guard binding delete index

This command deletes one static IP Source Guard (IPSG) binding, associated with a MAC address, IP address, interface and VLAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip source-guard binding delete index <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	A.B.C.D	IP address.
P-3	slot no./port no.	
P-4	1..4042	Enter the VLAN ID.

37.1.5 ip source-guard binding mode

This command activates or deactivates a configured static IPSG binding.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip source-guard binding mode <P-1> <P-2> <P-3> <P-4> <P-5>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	A.B.C.D	IP address.
P-3	slot no./port no.	
P-4	1..4042	Enter the VLAN ID.
P-5	active	Activate the option.
	inactive	Inactivate the option.

37.2 clear

Clear several items.

37.2.1 clear ip source-guard bindings

This command clears all dynamic IPSG bindings on all interfaces or on a specific interface.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear ip source-guard bindings [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

37.3 ip

IP interface commands.

37.3.1 ip source-guard mode

This command configures an interface for IP source guarding (IPSG).

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip source-guard mode

■ no ip source-guard mode

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no ip source-guard mode

37.3.2 ip source-guard verify-mac

This command configures an interface for additional MAC address verification, when performing IP source guarding (IPSG). This option cannot be enabled unless IPSG is enabled. Once it is enabled, it can only be disabled by disabling IPSG at this interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ip source-guard verify-mac

37.4 show

Display device options and settings.

37.4.1 show ip source-guard interfaces

This command shows the IP Source Guard (IPSG) status of all interfaces.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip source-guard interfaces

37.4.2 show ip source-guard bindings

This command displays the IPSG binding entries from the static and/or dynamic bindings table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ip source-guard bindings [<P-1>] [interface <P-2>] [vlan <P-3>]

[interface]: Restrict the output based on a specific interface.

[vlan]: Restrict the output based on VLAN.

Parameter	Value	Meaning
P-1	static	Restrict the output based on static bindings.
	dynamic	Restrict the output based on dynamic bindings.
P-2	slot no./port no.	
P-3	1..4042	Enter the VLAN ID.

38 Internet Protocol Version 4 (IPv4)

38.1 network

Configure the inband and outband connectivity.

38.1.1 network protocol

Select DHCP, BOOTP or none as the network configuration protocol.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network protocol <P-1>

Parameter	Value	Meaning
P-1	none	No network config protocol
	bootp	BOOTP
	dhcp	DHCP

38.1.2 network parms

Set network address, netmask and gateway

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network parms <P-1> <P-2> [<P-3>]

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.
P-3	A.B.C.D	IP address.

38.1.3 network dhcp config-load

Enables/disables the DHCP options 4/42 (time servers) and 66/67 (Load config over TFTP on boot) on DHCP/BOOTP client.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network dhcp config-load <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the option.
	disable	Disable the option.

38.2 clear

Clear several items.

38.2.1 clear arp-table-switch

Clear the agent's ARP table (cache).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear arp-table-switch

38.3 show

Display device options and settings.

38.3.1 show network parms

Display the network settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network parms

38.3.2 show network services

Display the opened UDP and TCP ports.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network services

38.3.3 show network dhcp

Display the additional settings for the DHCP/BOOTP client

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network dhcp

38.4 show

Display device options and settings.

38.4.1 show arp

Display the ARP table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show arp

39 Internet Protocol Version 6 (IPv6)

39.1 network

Configure the inband and outband connectivity.

39.1.1 network ipv6 gateway

Set network address of gateway

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 gateway <P-1>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.

39.1.2 network ipv6 operation

Enable or disable the IPv6 feature.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 operation

■ no network ipv6 operation

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: no network ipv6 operation

39.1.3 network ipv6 address delete

Delete a static IPv6 address.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 address delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	0..128	Prefix

39.1.4 network ipv6 address enable

Enable a static IPv6 address.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 address enable <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	0..128	Prefix

39.1.5 network ipv6 address disable

Disable a static IPv6 address.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 address disable <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	0..128	Prefix

39.1.6 network ipv6 address modify

Modify an IPv6 address

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 address modify <P-1> <P-2> eui-64 <P-3>

eui-64: Change the EUI option.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	0..128	Prefix
P-3	enable	Enable the option.
	disable	Disable the option.

39.1.7 network ipv6 address add

Add a new static IPv6 address.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 address add <P-1> <P-2> [<P-3>]

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	0..128	Prefix
P-3	eui-64	Extended unique identifier

39.1.8 network ipv6 protocol

Set protocol for IPv6 configuration: none, DHCP, SLAAC or both.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 protocol <P-1>

Parameter	Value	Meaning
P-1	none	Disable IPv6 Protocol
	autoconf	Enable SLAAC Protocol.
	dhcpv6	Enable DHCPv6 Protocol.
	all	Enable all IPv6 dynamic protocols.

39.1.9 network ipv6 dad-transmits

Set the number of Neighbor Solicitation packets to be sent for Duplicate Address Detection.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network ipv6 dad-transmits <P-1>

Parameter	Value	Meaning
P-1	0..5	Range of number of NS packets for DAD

39.2 show

Display device options and settings.

39.2.1 show network ipv6 neighbors

Show the table of neighbors.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network ipv6 neighbors

39.2.2 show network ipv6 address all

All IPv6 addresses.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network ipv6 address all

39.2.3 show network ipv6 address autoconf

IPv6 addresses obtained from SLAAC.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network ipv6 address autoconf

39.2.4 show network ipv6 address dhcpv6

IPv6 addresses obtained from DHCPv6.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show network ipv6 address dhcpv6

39.2.5 show network ipv6 global

Display the global IPv6 information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show network ipv6 global

40 Ring Coupling

40.1 ring-coupling

Configure the ring/net coupling settings.

40.1.1 ring-coupling add

Create a new Ring/Network coupling configuration. The configuration consists of default parameters and the operation is disabled. The interface specified as parameter represents the coupling port.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ring-coupling add <P-1> [mode <P-2>] [net-coupling <P-3>] [redundancy-mode <P-4>] [control-port <P-5>] [partner-port <P-6>]

[mode]: Configure operating mode.

[net-coupling]: Configure the Ring/Network coupling mode as either network or ring-only.

[redundancy-mode]: Configure the redundancy mode as either extended or normal.

[control-port]: Configure the control port (<slot/port>). The control port is only used for outband configurations.

[partner-port]: Configure the partner coupling port(<slot/port>, The partner coupling port is only used for the for the single configuration mode.

Parameter	Value	Meaning
P-1	slot no./port no.	

Parameter	Value	Meaning
P-2	single	Configure the operating mode of the ring coupling to single. Both of the coupling ports are local to the switch, switch performs master and slave functions.
	dual-master-inband	Configure the operating mode of the ring coupling to dual-master-inband. The second coupling port is on a remote switch, local switch is master, communication over network.
	dual-master-outband	Configure the operating mode of the ring coupling to dual-master-outband. The second coupling port is on a remote switch, local switch is master, communication over dedicated control port.
	dual-slave-inband	Configure the operating mode of the ring coupling to dual-slave-inband. The second coupling port is on a remote switch, local switch is slave, communication over network.
	dual-slave-outband	Configure the operating mode of the ring coupling to dual-slave-outband. The second coupling port is on a remote switch, local switch is slave, communication over dedicated control port.
P-3	ring-only	Select the ring coupling mode for a ring network. Both of the network segments that are coupled are HIPER rings.
	network	Select the ring coupling mode for a bus or mesh network. The network segment adjacent to the switches that handle the ring coupling is not a HIPER ring.
P-4	normal	Select the ring coupling mode for normal redundancy mode. The slave does not respond to a potential failure in the remote ring or network.
	extended	Select the ring coupling mode for extended redundancy mode. The slave responds to a potential failure in the remote ring or network.
P-5	slot no./port no.	
P-6	slot no./port no.	

40.1.2 ring-coupling delete

Delete the Ring/Network coupling configuration with the coupling-port index.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ring-coupling delete <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

40.1.3 ring-coupling modify

Modify the Ring/Network coupling configuration with the coupling-port index.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** ring-coupling modify <P-1> mode <P-2> control-port <P-3> partner-port <P-4> net-coupling <P-5> redundancy-mode <P-6>

mode: Modify the operating mode.

control-port: Modify the control port (<slot/port>). The control port is only used for outband configurations.

partner-port: Modify the partner coupling port(<slot/port>). The partner coupling port is only used for single configuration.

net-coupling: Configure the Ring/Network coupling mode as either network or ring-only.

redundancy-mode: Configure the redundancy mode as either extended or normal.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	single	Configure the operating mode of the ring coupling to single. Both of the coupling ports are local to the switch, switch performs master and slave functions.
	dual-master-inband	Configure the operating mode of the ring coupling to dual-master-inband. The second coupling port is on a remote switch, local switch is master, communication over network.
	dual-master-outband	Configure the operating mode of the ring coupling to dual-master-outband. The second coupling port is on a remote switch, local switch is master, communication over dedicated control port.
	dual-slave-inband	Configure the operating mode of the ring coupling to dual-slave-inband. The second coupling port is on a remote switch, local switch is slave, communication over network.
	dual-slave-outband	Configure the operating mode of the ring coupling to dual-slave-outband. The second coupling port is on a remote switch, local switch is slave, communication over dedicated control port.
P-3	slot no./port no.	
P-4	slot no./port no.	
P-5	ring-only	Select the ring coupling mode for a ring network. Both of the network segments that are coupled are HIPER rings.
	network	Select the ring coupling mode for a bus or mesh network. The network segment adjacent to the switches that handle the ring coupling is not a HIPER ring.

Parameter	Value	Meaning
P-6	normal	Select the ring coupling mode for normal redundancy mode. The slave does not respond to a potential failure in the remote ring or network.
	extended	Select the ring coupling mode for extended redundancy mode. The slave responds to a potential failure in the remote ring or network.

40.1.4 ring-coupling enable

Enable the Ring/Network coupling configuration with the coupling-port index.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ring-coupling enable <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

40.1.5 ring-coupling disable

Disable the Ring/Network coupling configuration with the coupling-port index.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ring-coupling disable <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

40.2 show

Display device options and settings.

40.2.1 show ring-coupling global

Display the ring coupling settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ring-coupling global

40.2.2 show ring-coupling status

Display the ring coupling states.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ring-coupling status

41 Link Backup

41.1 link-backup

Configure Link Backup parameters.

41.1.1 link-backup operation

Enable or disable Link Backup.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** link-backup operation

- no link-backup operation
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no link-backup operation

41.2 link-backup

Configure Link Backup parameters.

41.2.1 link-backup add

Add a Link Backup interface pair.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** link-backup add <P-1> [failback-time <P-2>]
[description <P-3>]

[failback-time]: FailBack time in seconds for the interface pair.

[description]: Description for the interface pair.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	0..3600	FailBack time interval.(default: 30)
P-3	string	Enter a user-defined text, max. 256 characters.

41.2.2 link-backup delete

Delete the associated backup interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-backup delete <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

41.2.3 link-backup modify

Modify a Link Backup interface pair.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-backup modify <P-1> [failback-status <P-2>] [failback-time <P-3>] [description <P-4>] [status <P-5>]

[failback-status]: Modify failback status.(default: enabled)

[failback-time]: Modify failback time.(default: 30)

[description]: Description for the interface pair.

[status]: Enable or disable a Link Backup interface pair entry.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	enable	Enable the option.
	disable	Disable the option.
P-3	0..3600	FailBack time interval.(default: 30)
P-4	string	Enter a user-defined text, max. 256 characters.
P-5	enable	Enable the option.
	disable	Disable the option.

41.3 show

Display device options and settings.

41.3.1 show link-backup operation

Display the Link Backup global information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show link-backup operation

41.3.2 show link-backup pairs

Display the Link Backup interface pairs.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show link-backup pairs [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	slot no./port no.	

42 Link Layer Discovery Protocol (LLDP)

42.1 Ildp

Configure of Link Layer Discovery Protocol.

42.1.1 Ildp operation

Enable or disable the LLDP operational state.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp operation

■ no Ildp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp operation

42.1.2 Ildp config chassis admin-state

Enable or disable the LLDP operational state.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis admin-state <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the option.
	disable	Disable the option.

42.1.3 Ildp config chassis notification-interval

Enter the LLDP notification interval in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis notification-interval <P-1>

Parameter	Value	Meaning
P-1	5..3600	Enter a number in the given range.

42.1.4 Ildp config chassis re-init-delay

Enter the LLDP re-initialization delay in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis re-init-delay <P-1>

Parameter	Value	Meaning
P-1	1..10	Enter a number in the given range.

42.1.5 lldp config chassis tx-delay

Enter the LLDP transmit delay in seconds (tx-delay smaller than (0.25 × tx-interval))

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis tx-delay <P-1>

Parameter	Value	Meaning
P-1	1..8192	Enter a number in the given range (tx-delay smaller than (0.25 × tx-interval))

42.1.6 lldp config chassis tx-hold-multiplier

Enter the LLDP transmit hold multiplier.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis tx-hold-multiplier <P-1>

Parameter	Value	Meaning
P-1	2..10	Enter a number in the given range.

42.1.7 lldp config chassis tx-interval

Enter the LLDP transmit interval in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis tx-interval <P-1>

Parameter	Value	Meaning
P-1	5..32768	Enter a number in the given range.

42.2 show

Display device options and settings.

42.2.1 show lldp global

Display the LLDP global configurations.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show lldp global

42.2.2 show lldp port

Display the port specific LLDP configurations.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp port [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

42.2.3 show lldp remote-data

Remote information collected with LLDP.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp remote-data [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

42.3 lldp

Configure of Link Layer Discovery Protocol on a port.

42.3.1 lldp admin-state

Configure how the interface processes LLDP frames.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** lldp admin-state <P-1>

Parameter	Value	Meaning
P-1	tx-only	Interface will only transmit LLDP frames. Received frames are not processed.
	rx-only	Interface will only receive LLDP frames. Frames are not transmitted.
	tx-and-rx	Interface will transmit and receive LLDP frames. This is the default setting.
	disable	Interface will neither transmit nor process received LLDP frames.

42.3.2 lldp fdb-mode

Configure the LLDP FDB mode for this interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** lldp fdb-mode <P-1>

Parameter	Value	Meaning
P-1	lldp-only	Collected remote data will be based on received LLDP frames only.
	mac-only	Collected remote data will be based on the switch's FDB entries only.
	both	Collected remote data will be based on received LLDP frames as well as on the switch's FDB entries.
	auto-detect	As long as no LLDP frames are received, the collected remote data will be based on the switch's FDB entries only. After the first LLDP frame is received, the remote data will be based on received LLDP frames only. This is the default setting.

42.3.3 lldp max-neighbors

Enter the LLDP max neighbors for interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp max-neighbors <P-1>

Parameter	Value	Meaning
P-1	1..50	Enter a number in the given range.

42.3.4 lldp notification

Enable or disable the LLDP notification operation for interface.

- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: lldp notification
- no lldp notification
Disable the option
- ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp notification

42.3.5 lldp tlv inline-power

Enable or disable inline-power TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv inline-power <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

- no lldp tlv inline-power
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv inline-power <P-1>

42.3.6 lldp tlv link-aggregation

Enable or disable link-aggregation TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv link-aggregation <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

- no lldp tlv link-aggregation
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv link-aggregation <P-1>

42.3.7 lldp tlv mac-phy-config-state

Enable or disable mac-phy-config-state TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv mac-phy-config-state <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

- no lldp tlv mac-phy-config-state
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv mac-phy-config-state <P-1>

42.3.8 lldp tlv max-frame-size

Enable or disable max-frame-size TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv max-frame-size <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

- no lldp tlv max-frame-size
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv max-frame-size <P-1>

42.3.9 lldp tlv mgmt-addr

Enable or disable mgmt-addr TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv mgmt-addr

- no lldp tlv mgmt-addr
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv mgmt-addr

42.3.10 lldp tlv port-desc

Enable or disable port description TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv port-desc <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

- no lldp tlv port-desc
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv port-desc <P-1>

42.3.11 lldp tlv port-vlan

Enable or disable port-vlan TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv port-vlan

- no lldp tlv port-vlan
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no lldp tlv port-vlan

42.3.12 lldp tlv protocol

Enable or disable protocol TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv protocol

■ no lldp tlv protocol

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv protocol

42.3.13 lldp tlv sys-cap

Enable or disable system capabilities TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv sys-cap <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

■ no lldp tlv sys-cap

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv sys-cap <P-1>

42.3.14 lldp tlv sys-desc

Enable or disable system description TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv sys-desc <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

■ no lldp tlv sys-desc

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv sys-desc <P-1>

42.3.15 lldp tlv sys-name

Enable or disable system name TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv sys-name <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

■ no lldp tlv sys-name

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv sys-name <P-1>

42.3.16 lldp tlv vlan-name

Enable or disable vlan name TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv vlan-name

■ no lldp tlv vlan-name

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv vlan-name

42.3.17 lldp tlv protocol-based-vlan

Enable or disable protocol-based vlan TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv protocol-based-vlan

■ no lldp tlv protocol-based-vlan

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv protocol-based-vlan

43 Media Endpoint Discovery LLDP-MED

43.1 Ildp

Configure of Link Layer Discovery Protocol on a port.

43.1.1 Ildp med confignotification

Enable or disable LLDP-MED notification send for this interface.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** lldp med confignotification

■ no Ildp med confignotification

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no lldp med confignotification

43.1.2 Ildp med transmit-tlv capabilities

Include/Exclude LLDP MED capabilities TLV.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** lldp med transmit-tlv capabilities

■ no Ildp med transmit-tlv capabilities

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no lldp med transmit-tlv capabilities

43.1.3 Ildp med transmit-tlv network-policy

Include/Exclude LLDP network policy TLV.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** lldp med transmit-tlv network-policy

■ no Ildp med transmit-tlv network-policy

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no lldp med transmit-tlv network-policy

43.2 Ildp

Configure of Link Layer Discovery Protocol.

43.2.1 Ildp med faststartrepeatcount

Configure LLDP-MED fast start repeat count.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** lldp med faststartrepeatcount <P-1>

Parameter	Value	Meaning
P-1	1..10	Enter a value representing the number of LLDP PDUs that will be transmitted. Default is 3.

43.3 show

Display device options and settings.

43.3.1 show Ildp med global

Display a summary of the current LLDP-MED configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp med global

43.3.2 show Ildp med interface

Display the current LLDP-MED configuration on a specific port.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp med interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

43.3.3 show Ildp med local-device

Display detailed information about the LLDP-MED data

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp med local-device <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

43.3.4 show lldp med remote-device detail

Display the LLDP-MED detail configuration for a remote device.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp med remote-device detail <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

43.3.5 show lldp med remote-device summary

Display the LLDP-MED summary configuration for a remote device.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show lldp med remote-device summary [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

44 Logging

44.1 logging

Logging configuration.

44.1.1 logging audit-trail

Add a comment for the audit trail.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging audit-trail <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 80 characters.

44.1.2 logging buffered severity

Configure the minimum severity level to be logged to the high priority buffer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging buffered severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

44.1.3 logging host add

Add a new logging host.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** logging host add <P-1> addr <P-2> [transport <P-3>] [port <P-4>] [severity <P-5>] [type <P-6>]

addr: Enter the IP address of the server.

[transport]: Configure the type of transport used for syslog server transmission.

[port]: Enter the port used for syslog server transmission.

[severity]: Configure the minimum severity level to be sent to this syslog server.

[type]: Configure the type of log messages to be sent to the syslog server.

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index
P-2	A.B.C.D	IP address.
P-3	udp	The UDP-based transmission.
	tls	The TLS-based transmission.
P-4	1..65535	Port number to be used
P-5	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
P-6	systemlog	the system event log entries
	audittrail	the audit trail log entries

44.1.4 logging host delete

Delete a logging host.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging host delete <P-1>

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index

44.1.5 logging host enable

Enable a logging host.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging host enable <P-1>

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index

44.1.6 logging host disable

Disable a logging host.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging host disable <P-1>

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index

44.1.7 logging host modify

Modify an existing logging host.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging host modify <P-1> [addr <P-2>] [transport <P-3>] [port <P-4>] [severity <P-5>] [type <P-6>]

[addr]: Enter the IP address of the server.

[transport]: Configure the type of transport used for syslog server transmission.

[port]: Enter the port used for syslog server transmission.

[severity]: Configure the minimum severity level to be sent to this syslog server.

[type]: Configure the type of log messages to be sent to the syslog server.

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index
P-2	A.B.C.D	IP address.

Parameter	Value	Meaning
P-3	udp	The UDP-based transmission.
	tls	The TLS-based transmission.
P-4	1.65535	Port number to be used
P-5	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
P-6	systemlog	the system event log entries
	audittrail	the audit trail log entries

44.1.8 logging syslog operation

Enable or disable the syslog client.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging syslog operation

■ no logging syslog operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging syslog operation

44.1.9 logging current-console operation

Enable or disable logging messages to the current remote console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging current-console operation

■ no logging current-console operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging current-console operation

44.1.10 logging current-console severity

Configure the minimum severity level to be sent to the current remote console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging current-console severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

44.1.11 logging console operation

Enable or disable logging to the local V.24 console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging console operation

- no logging console operation
 - Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no logging console operation

44.1.12 logging console severity

Configure the minimum severity level to be logged to the V.24 console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging console severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
3	Same as error	
4	Same as warning	
5	Same as notice	
6	Same as informational	
7	Same as debug	

44.1.13 logging persistent operation

Enable or disable persistent logging. This feature is only available when an ENVM is connected to the device. The logging information is saved on the selected ENVM.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent operation

- no logging persistent operation
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no logging persistent operation

44.1.14 logging persistent numfiles

Enter the maximum number of log files.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent numfiles <P-1>

Parameter	Value	Meaning
P-1	0..25	number of logfiles

44.1.15 logging persistent filesize

Enter the maximum size of a log file.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent filesize <P-1>

Parameter	Value	Meaning
P-1	0..4096	Maximum persistent logfile size on the non-volatile memory in kBytes

44.1.16 logging persistent severity-level

Configure the minimum severity level to be logged into files.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent severity-level <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
6	Same as informational	
7	Same as debug	

44.1.17 logging email operation

Enable or disable logging email-alert globally.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email operation

■ no logging email operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging email operation

44.1.18 logging email from-addr

Configure mail address used by device to send email-alert.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email from-addr <P-1>

Parameter	Value	Meaning
P-1	string	Enter a valid email address

44.1.19 logging email duration

Periodic timer (in minutes) to send an non-critical logs in mail.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email duration <P-1>

Parameter	Value	Meaning
P-1	30..1440	Time duration in minutes

44.1.20 logging email severity urgent

Urgent severity level

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email severity urgent <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

44.1.21 logging email severity non-urgent

Non-urgent severity level

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email severity non-urgent <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
6	Same as informational	
7	Same as debug	

44.1.22 logging email to-addr add

Create a destination address entry with default values

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email to-addr add <P-1> [addr <P-2>] [msgtype <P-3>]

[addr]: Create an entry with specified address

[msgtype]: Create an entry with specified message type

Parameter	Value	Meaning
P-1	1..10	Destination address entry index
P-2	string	Enter a valid email address
P-3	urgent	Urgent message type
	non-urgent	Non-urgent message type

44.1.23 logging email to-addr delete

Delete a destination address

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email to-addr delete <P-1>

Parameter	Value	Meaning
P-1	1..10	Destination address entry index

44.1.24 logging email to-addr modify

Modify a destination address

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** logging email to-addr modify <P-1> [addr <P-2>] [msgtype <P-3>]

[addr]: Modify the destination address

[msgtype]: Modify the message type

Parameter	Value	Meaning
P-1	1..10	Destination address entry index
P-2	string	Enter a valid email address
P-3	urgent	Urgent message type
	non-urgent	Non-urgent message type

44.1.25 logging email mail-server add

Add a server entry to SMTP address table

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** logging email mail-server add <P-1> [addr <P-2>] [security <P-3>] [username <P-4>] [password <P-5>] [port <P-6>] [timeout <P-7>] [description <P-8>]

[addr]: SMTP server address

[security]: Security mode used in SMTP server.

[username]: Login ID to access SMTP server.

[password]: Password to access SMTP server.

[port]: SMTP server port number.

[timeout]: SMTP server connection timeout

[description]: SMTP server description

Parameter	Value	Meaning
P-1	1..5	SMTP server index
P-2	A.B.C.D	IP address.
P-3	none	Security mode none
	tlsv1	Security mode TLSv1
P-4	string	Enter a user-defined text, max. 32 characters.
P-5	string	Enter a user-defined text, max. 32 characters.
P-6	1..65535	Port number to be used
P-7	1..15	SMTP server timeout range
P-8	string	Enter a user-defined text, max. 1024 characters (allowed characters are from ASCII 32 to 127).

44.1.26 logging email mail-server delete

Delete a server entry from SMTP address table

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email mail-server delete <P-1>

Parameter	Value	Meaning
P-1	1..5	SMTP server index

44.1.27 logging email mail-server modify

Modify an SMTP server entry

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email mail-server modify <P-1> [addr <P-2>] [security <P-3>] [username <P-4>] [password <P-5>] [port <P-6>] [timeout <P-7>] [description <P-8>]

[addr]: SMTP server address

[security]: Security mode used in SMTP server.

[username]: Login ID to access SMTP server.

[password]: Password to access SMTP server.

[port]: SMTP server port number.

[timeout]: SMTP Timeout

[description]: SMTP server description

Parameter	Value	Meaning
P-1	1..5	SMTP server index
P-2	A.B.C.D	IP address.
P-3	none	Security mode none
	tlsv1	Security mode TLSv1
P-4	string	Enter a user-defined text, max. 32 characters.
P-5	string	Enter a user-defined text, max. 32 characters.
P-6	1..65535	Port number to be used
P-7	1..15	SMTP server timeout range
P-8	string	Enter a user-defined text, max. 1024 characters (allowed characters are from ASCII 32 to 127).

44.1.28 logging email subject add

Create an email subject entry

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email subject add <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	urgent	Urgent message type
	non-urgent	Non-urgent message type
P-2	string	<string> Enter the email subject (Within double quotations if subject includes space)

44.1.29 logging email subject delete

Delete an email subject entry

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email subject delete <P-1>

Parameter	Value	Meaning
P-1	urgent	Urgent message type
	non-urgent	Non-urgent message type

44.1.30 logging email subject modify

Modify an email subject entry

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email subject modify <P-1> <P-2>

Parameter	Value	Meaning
P-1	urgent	Urgent message type
	non-urgent	Non-urgent message type
P-2	string	<string> Enter the email subject (Within double quotations if subject includes space)

44.1.31 logging email test msgtype

Configure the message type for test mail.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging email test msgtype <P-1> <P-2>

Parameter	Value	Meaning
P-1	urgent	Urgent message type
	non-urgent	Non-urgent message type
P-2	string	Enter a user-defined text, max. 255 characters.

44.2 show

Display device options and settings.

44.2.1 show logging buffered

Display the buffered (in-memory) log entries.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging buffered [<P-1>]

Parameter	Value	Meaning
P-1	string	<filter> Enter a comma separated list of severity ranges, numbers or enum strings are allowed. Example: 0-1,informational-debug

44.2.2 show logging traplogs

Display the trap log entries.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging traplogs

44.2.3 show logging console

Display the console logging configurations.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging console

44.2.4 show logging persistent

Display the persistent logging configurations.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging persistent [logfiles] [logfiles]: List the persistent log files.

44.2.5 show logging syslog

Display the current syslog operational setting.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging syslog

44.2.6 show logging host

Display a list of logging hosts currently configured.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show logging host

44.2.7 show logging email statistics

Display the statistics of email logging.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging email statistics

44.2.8 show logging email global

Display the global settings of email logging feature.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging email global

44.2.9 show logging email to-addr

Display a list of destination addresses configured.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging email to-addr [<P-1>]

Parameter	Value	Meaning
P-1	1..10	Destination address entry index

44.2.10 show logging email subject

Display the subject entries configured.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging email subject [<P-1>]

Parameter	Value	Meaning
P-1	urgent	Urgent message type
	non-urgent	Non-urgent message type

44.2.11 show logging email mail-server

Display the SMTP server settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging email mail-server [<P-1>]

Parameter	Value	Meaning
P-1	1..5	SMTP server index

44.3 copy

Copy different kinds of items.

44.3.1 copy eventlog buffered envm

Copy a buffered log from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eventlog buffered envm <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

44.3.2 copy eventlog buffered remote

Copy a buffered log from the device to a file server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eventlog buffered remote <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

44.3.3 copy eventlog persistent

Copy the persistent logs from the device to an envm or a file server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eventlog persistent <P-1> envm <P-2> remote <P-3>

envm: Copy the persistent log from the device to external non-volatile memory.

remote: Copy the persistent logs from the device to a file server.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	string	Enter a user-defined text, max. 128 characters.

44.3.4 copy traplog system envm

Copy the traplog from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy traplog system envm <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

44.3.5 copy traplog system remote

Copy the traplog from the device to a file server

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy traplog system remote <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

44.3.6 copy audittrail system envm

Copy the audit trail from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator, Auditor
- ▶ Format: copy audittrail system envm <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

44.3.7 copy audittrail system remote

Copy the audit trail from the device to a file server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator, Auditor
- ▶ Format: copy audittrail system remote <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

44.3.8 copy mailcert remote

Copy CA certificate file (*.pem) from the remote AD server to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy mailcert remote <P-1> nvm [<P-2>]

nvm: Copy CA certificate file (*.pem) from the remote AD server to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

44.3.9 copy mailcacert envm

Copy CA certificate file (*.pem) from external non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy mailcacert envm <P-1> nvm [<P-2>]

nvm: Copy CA certificate file (*.pem) from external non-volatile memory to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

44.3.10 copy syslogcacert remote

Copy CA certificate file (*.pem) from the remote AD server to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy syslogcacert remote <P-1> nvm [<P-2>]

nvm: Copy CA certificate file (*.pem) from the remote AD server to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

44.3.11 copy syslogcacert envm

Copy CA certificate file (*.pem) from external non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy syslogcacert envm <P-1> nvm [<P-2>]

nvm: Copy CA certificate file (*.pem) from external non-volatile memory to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

44.4 clear

Clear several items.

44.4.1 clear logging buffered

Clear buffered log from memory.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** clear logging buffered

44.4.2 clear logging persistent

Clear persistent log from memory.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** clear logging persistent

44.4.3 clear logging email statistics

Clear email statistics

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** clear logging email statistics

44.4.4 clear eventlog

Clear the event log entries from memory.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** clear eventlog

45 Loop Protection

45.1 loop-protection

Configure loop protection settings.

45.1.1 loop-protection operation

Enable or disable loop protection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: loop-protection operation

■ no loop-protection operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no loop-protection operation

45.1.2 loop-protection tx-interval

Transmit interval for detection PDUs.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: loop-protection tx-interval <P-1>

Parameter	Value	Meaning
P-1	1..10	PDU transmit interval (in seconds).

45.1.3 loop-protection rx-threshold

Amount of detection PDUs to be received until an action is performed.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: loop-protection rx-threshold <P-1>

Parameter	Value	Meaning
P-1	1..50	PDU receive threshold (in frames).

45.2 loop-protection

Configure loop protection settings for interfaces.

45.2.1 loop-protection operation

Enable or disable loop protection.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** loop-protection operation

■ no loop-protection operation

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no loop-protection operation

45.2.2 loop-protection mode

Set loop protection interface operation mode.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** loop-protection mode <P-1>

Parameter	Value	Meaning
P-1	active	The device will send detection PDUs and process them on reception.
	passive	The device will only process detection PDUs.

45.2.3 loop-protection action

Set loop protection action.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** loop-protection action <P-1>

Parameter	Value	Meaning
P-1	trap	Send a trap.
	auto-disable	Enable control via Auto-Disable.
	all	Send trap and enable control via Auto-Disable.

45.2.4 loop-protection vlan

Specify the loop detection operating VLAN.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** loop-protection vlan <P-1>

Parameter	Value	Meaning
P-1	0..4042	Enter the VLAN ID. Entering of ID 0 disables the feature.

45.2.5 loop-protection clear-statistics

Clear loop protection interface statistics.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** loop-protection clear-statistics

45.3 show

Display device options and settings.

45.3.1 show loop-protection global

Loop protection settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show loop-protection global

45.3.2 show loop-protection interface

Display loop protection interface settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show loop-protection interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

46 MAC Notification

46.1 mac

Set MAC parameters.

46.1.1 mac notification operation

Enable or disable MAC notification globally.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac notification operation

■ no mac notification operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac notification operation

46.1.2 mac notification interval

Set MAC notification interval in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac notification interval <P-1>

Parameter	Value	Meaning
P-1	0..2147483647	Enter a number in the given range.

46.2 mac

MAC interface commands.

46.2.1 mac notification operation

Enable or disable MAC notification on this interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac notification operation

- no mac notification operation
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no mac notification operation

46.3 show

Display device options and settings.

46.3.1 show mac notification global

Display the MAC notification global information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mac notification global

46.3.2 show mac notification interface

Display the MAC notification interface information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mac notification interface

47 Management Access

47.1 network

Configure the inband and outband connectivity.

47.1.1 network management access web timeout

Set the web interface idle timeout.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** network management access web timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Idle timeout of a session in minutes (default: 5).

47.1.2 network management access add

Add a new entry with index.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** network management access add <P-1> [ip <P-2>] [mask <P-3>] [http <P-4>] [https <P-5>] [snmp <P-6>] [telnet <P-7>] [iec61850-mms <P-8>] [modbus-tcp <P-9>] [ssh <P-10>] [ethernet-ip <P-11>]

[ip]: Configure IP address which should have access to management.

[mask]: Configure network mask to allow a subnet for management access.

[http]: Configure if HTTP is allowed to have management access.

[https]: Configure if HTTPS is allowed to have management access.

[snmp]: Configure if SNMP is allowed to have management access.

[telnet]: Configure if TELNET is allowed to have management access.

[iec61850-mms]: Configure if IEC61850-MMS is allowed to have management access.

[modbus-tcp]: Configure if Modbus TCP/IP is allowed to have management access.

[ssh]: Configure if SSH is allowed to have management access.

[ethernet-ip]: Configure if EtherNet/IP is allowed to have management access.

Parameter	Value	Meaning
P-1	1..16	Pool entry index.
P-2	A.B.C.D	IP address.
P-3	0..32	Prefix length netmask.
P-4	enable	Enable the option.
	disable	Disable the option.

Parameter	Value	Meaning
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.
P-9	enable	Enable the option.
	disable	Disable the option.
P-10	enable	Enable the option.
	disable	Disable the option.
P-11	enable	Enable the option.
	disable	Disable the option.

47.1.3 network management access delete

Delete an entry with index.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: network management access delete <P-1>

Parameter	Value	Meaning
P-1	1..16	Pool entry index.

47.1.4 network management access modify

Modify an entry with index.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: network management access modify <P-1> ip <P-2> mask <P-3> http <P-4> https <P-5> snmp <P-6> telnet <P-7> iec61850-mms <P-8> modbus-tcp <P-9> ssh <P-10> ethernet-ip <P-11>

ip: Configure ip-address which should have access to management.

mask: Configure network mask to allow a subnet for management access.

http: Configure if HTTP is allowed to have management access.

https: Configure if HTTPS is allowed to have management access.

snmp: Configure if SNMP is allowed to have management access.

telnet: Configure if TELNET is allowed to have management access.

iec61850-mms: Configure if IEC61850-MMS is allowed to have management access.

modbus-tcp: Configure if Modbus TCP/IP is allowed to have management access.

ssh: Configure if SSH is allowed to have management access.

`ethernet-ip`: Configure if EtherNet/IP is allowed to have management access.

Parameter	Value	Meaning
P-1	1..16	Pool entry index.
P-2	A.B.C.D	IP address.
P-3	0..32	Prefix length netmask.
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.
P-9	enable	Enable the option.
	disable	Disable the option.
P-10	enable	Enable the option.
	disable	Disable the option.
P-11	enable	Enable the option.
	disable	Disable the option.

47.1.5 network management access operation

Enable/Disable operation for RMA.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: network management access operation

■ no network management access operation

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no network management access operation

47.1.6 network management access status

Activate/Deactivate an entry.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: network management access status <P-1>

Parameter	Value	Meaning
P-1	1..16	Pool entry index.

- no network management access status
 - Disable the option
 - ▶ Mode: Privileged Exec Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no network management access status <P-1>

47.2 show

Display device options and settings.

47.2.1 show network management access global

Display the global restricted management access preferences.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network management access global

47.2.2 show network management access rules

Display the restricted management access rules.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network management access rules [<P-1>]

Parameter	Value	Meaning
P-1	1..16	Pool entry index.

47.2.3 show network management access counters

Display the management access counters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network management access counters

47.3 clear

Clear several items.

47.3.1 clear management-counters

Clear management access counters.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear management-counters

48 Modbus

48.1 modbus-tcp

Configure Modbus TCP/IP server settings.

48.1.1 modbus-tcp operation

Enable or disable the Modbus TCP/IP server.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** modbus-tcp operation

■ no modbus-tcp operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no modbus-tcp operation

48.1.2 modbus-tcp write-access

Enable or disable the write-access on Modbus TCP/IP registers. - Possible security risk, as Modbus TCP/IP communication is not authenticated - .

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** modbus-tcp write-access

■ no modbus-tcp write-access

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no modbus-tcp write-access

48.1.3 modbus-tcp port

Defines the port number of the Modbus TCP/IP server (default: 502).

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** modbus-tcp port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Enter port number between 1 and 65535

48.1.4 modbus-tcp max-sessions

Defines the maximum number of concurrent Modbus TCP/IP sessions (default: 5).

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** modbus-tcp max-sessions <P-1>

Parameter	Value	Meaning
P-1	1..5	Maximum number of concurrent Modbus TCP/IP server sessions (default: 5).

48.2 show

Display device options and settings.

48.2.1 show modbus-tcp

Display the Modbus TCP/IP server settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show modbus-tcp

49 Media Redundancy Protocol (MRP)

49.1 mrp

Configure the MRP settings.

49.1.1 mrp domain modify advanced-mode

Configure the MRM Advanced Mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify advanced-mode <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the option.
	disable	Disable the option.

49.1.2 mrp domain modify manager-priority

Configure the MRM priority.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify manager-priority <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter the MRM priority (default: 32768).

49.1.3 mrp domain modify mode

Configure the role of the MRP device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify mode <P-1>

Parameter	Value	Meaning
P-1	client	The device will be in the role of a ring client (MRC).
	manager	The device will be in the role of a ring manager (MRM).

49.1.4 mrp domain modify name

Configure the logical name of the MRP domain.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify name <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

49.1.5 mrp domain modify operation

Enable or disable the MRP function.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the option.
	disable	Disable the option.

49.1.6 mrp domain modify port primary

Configure the primary ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify port primary <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

49.1.7 mrp domain modify port secondary

Configure the secondary ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify port secondary <P-1> [fixed-backup <P-2>]

[fixed-backup]: Enable or disable the secondary ring port of the manager to be the backup port permanently.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	enable	Enable the option.
	disable	Disable the option.

49.1.8 mrp domain modify recovery-delay

Configure the MRM Recovery Delay.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify recovery-delay <P-1>

Parameter	Value	Meaning
P-1	500ms	Maximum recovery delay of 500ms in the MRP domain.
	200ms	Maximum recovery delay of 200ms in the MRP domain.

49.1.9 mrp domain modify round-trip-delay

Configure the round-trip-delay counters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify round-trip-delay <P-1>

Parameter	Value	Meaning
P-1	reset	Reset the round-trip-delay counters.

49.1.10 mrp domain modify vlan

Configure the VLAN identifier of the MRP domain.\n(VLAN ID 0 means that no VLAN is used).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain modify vlan <P-1>

Parameter	Value	Meaning
P-1	0..4042	VLAN identifier of the MRP domain.\n(VLAN ID 0 means that no VLAN is used).

49.1.11 mrp domain add default-domain

Default MRP domain ID.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain add default-domain

49.1.12 mrp domain add domain-id

MRP domain ID. Format: 16 bytes in decimal notation.\n(Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain add domain-id <P-1>

Parameter	Value	Meaning
P-1	string	<domain id> MRP domain ID. Format: 16 bytes in decimal notation.\n(Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

49.1.13 mrp domain delete

Delete the current MRP domain.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp domain delete

49.1.14 mrp operation

Enable or disable MRP.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp operation

■ no mrp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mrp operation

49.2 show

Display device options and settings.

49.2.1 show mrp

Display the MRP settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mrp

50 MRP IEEE

50.1 mrp-ieee

Configure IEEE MRP parameters and protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration on a port.

50.1.1 mrp-ieee global join-time

Set the IEEE multiple registration protocol join time-interval. The join timer controls the interval between join message transmissions sent to applicant state machines. An instance of this timer is required on a per-Port, per-MRP participant basis.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `mrp-ieee global join-time <P-1>`

Parameter	Value	Meaning
P-1	10..100	Join time-interval in centiseconds.

50.1.2 mrp-ieee global leave-time

Set the IEEE multiple registration protocol leave time-interval. The leave timer controls the period of time that the registrar state machine waits in the leave state before transiting to the empty state. An instance of the timer is required for each state machine in the leave state.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `mrp-ieee global leave-time <P-1>`

Parameter	Value	Meaning
P-1	20..600	Leave time-interval in centiseconds.

50.1.3 mrp-ieee global leave-all-time

Set the IEEE multiple registration protocol leave-all time-interval. The leave all timer controls the frequency with which the leaveall state machine generates leaveall PDUs. The timer is required on a per-Port, per-MRP Participant basis.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `mrp-ieee global leave-all-time <P-1>`

Parameter	Value	Meaning
P-1	200..6000	Leave-All time-interval in centiseconds.

50.2 show

Display device options and settings.

50.2.1 show mrp-ieee global interface

Display the global configuration of IEEE multiple registration protocol per interface.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee global interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

51 MRP IEEE MMRP

51.1 mrp-ieee

Configure IEEE MRP protocols.

51.1.1 mrp-ieee mmrp vlan-id

Configure the VLAN parameters.

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** mrp-ieee mmrp vlan-id <P-1> forward-all <P-2> forbidden-servicereq <P-3>

forward-all: Enable or disable 'Forward All Groups' in a given Vlan for a given interface.

forbidden-servicereq: Enable or disable the mmrp feature 'Forbidden Service Requirement' in a given Vlan for a given interface.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	slot no./port no.	
P-3	slot no./port no.	

■ no mrp-ieee mmrp vlan-id

Disable the option

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no mrp-ieee mmrp vlan-id <P-1> forward-all <P-2> forbidden-servicereq <P-3>

51.2 show

Display device options and settings.

51.2.1 show mrp-ieee mmrp global

Display the IEEE MMRP global configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mmrp global

51.2.2 show mrp-ieee mmrp interface

Display the IEEE MMRP interface configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mmrp interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

51.2.3 show mrp-ieee mmrp statistics global

Display the IEEE MMRP global statistics.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mmrp statistics global

51.2.4 show mrp-ieee mmrp statistics interface

Display the IEEE MMRP interface statistics.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mmrp statistics interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

51.2.5 show mrp-ieee mmrp service-requirement forward-all vlan

Display the Forward-All setting for port in given VLAN.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mmrp service-requirement forward-all vlan [<P-1>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

51.2.6 show mrp-ieee mmrp service-requirement forbidden vlan

Display the Forward-All setting for port in given VLAN.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mmrp service-requirement forbidden vlan [<P-1>]

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

51.3 mrp-ieee

Configure IEEE MRP protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration.

51.3.1 mrp-ieee mmrp operation

Enable or disable MMRP globally. Devices use MMRP information for dynamic registration of group membership and individual MAC addresses with end devices and switches that support extended filtering services, within the connected LAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp-ieee mmrp operation

■ no mrp-ieee mmrp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mrp-ieee mmrp operation

51.3.2 mrp-ieee mmrp periodic-machine

Enable or disable MMRP periodic state machine globally. When enabled, the periodic state machine sends extra MMRP messages when the periodic timer expires.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp-ieee mmrp periodic-machine

■ no mrp-ieee mmrp periodic-machine

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mrp-ieee mmrp periodic-machine

51.4 clear

Clear several items.

51.4.1 clear mrp-ieee mmrp

Clear the IEEE MMRP global and port statistic tables.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear mrp-ieee mmrp

51.5 mrp-ieee

Configure IEEE MRP parameters and protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration on a port.

51.5.1 mrp-ieee mmrp operation

Enable or disable MMRP on the interface, with MMRP enabled globally and on this interface, the device sends and receives MMRP messages on this port.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** mrp-ieee mmrp operation

■ no mrp-ieee mmrp operation

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no mrp-ieee mmrp operation

51.5.2 mrp-ieee mmrp restrict-register

Enable or disable restriction of dynamic mac address registration using IEEE MMRP on the port. When enabled, the dynamic registration of mac address attributes is allowed only if the attribute has already been statically registered on the device.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** mrp-ieee mmrp restrict-register

■ no mrp-ieee mmrp restrict-register

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no mrp-ieee mmrp restrict-register

51.6 show

Display device options and settings.

51.6.1 show mac-filter-table mmrp

Display the MMRP entries in the MFDB table.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mac-filter-table mmrp

52 MRP IEEE MSRP

52.1 mrp-ieee

Configure IEEE MRP protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp-ieee

52.2 show

Display device options and settings.

52.2.1 show mrp-ieee

Display IEEE MRP and its application related information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mrp-ieee

52.3 clear

Clear several items.

52.3.1 clear mrp-ieee

Clear IEEE MRP application related statistics.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear mrp-ieee

53 MRP IEEE MVRP

53.1 mrp-ieee

Configure IEEE MRP protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration.

53.1.1 mrp-ieee mvrp operation

Enable or disable IEEE MVRP globally. When enabled, the device distributes VLAN membership information on MVRP enable active ports. MVRP-aware devices use the information to dynamically create VLAN members and update the local VLAN member database.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** mrp-ieee mvrp operation

■ no mrp-ieee mvrp operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no mrp-ieee mvrp operation

53.1.2 mrp-ieee mvrp periodic-machine

Enable or disable IEEE MVRP periodic state machine globally. When enabled, the device sends MVRP messages to the connected MVRP-aware devices when the periodic timer expires.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** mrp-ieee mvrp periodic-machine

■ no mrp-ieee mvrp periodic-machine

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no mrp-ieee mvrp periodic-machine

53.2 mrp-ieee

Configure IEEE MRP parameters and protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration on a port.

53.2.1 mrp-ieee mvrp operation

Enable or disable IEEE MVRP on the port. When enabled, globally and on this port, the device distributes VLAN membership information to MVRP aware devices connected to this port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp-ieee mvrp operation

■ no mrp-ieee mvrp operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mrp-ieee mvrp operation

53.2.2 mrp-ieee mvrp restrict-register

Enable or disable restriction of dynamic VLAN registration using IEEE MVRP on the port. When enabled, the dynamic registration of VLAN attributes is allowed only if the attribute has already been statically registered on the device.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mrp-ieee mvrp restrict-register

■ no mrp-ieee mvrp restrict-register

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mrp-ieee mvrp restrict-register

53.3 show

Display device options and settings.

53.3.1 show mrp-ieee mvrp global

Display the IEEE MVRP global configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mrp-ieee mvrp global

53.3.2 show mrp-ieee mvrp interface

Display the IEEE MVRP interface configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mvrp interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

53.3.3 show mrp-ieee mvrp statistics global

Display the IEEE MVRP global statistics.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mvrp statistics global

53.3.4 show mrp-ieee mvrp statistics interface

Display the IEEE MVRP interface statistics.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show mrp-ieee mvrp statistics interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

53.4 clear

Clear several items.

53.4.1 clear mrp-ieee mvrp

Clear the IEEE MVRP global and port statistic tables.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** clear mrp-ieee mvrp

54 Out-of-band Management

54.1 network

Configure the inband and outband connectivity.

54.1.1 network usb operation

Enable or disable the USB out-of-band management.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** network usb operation

■ no network usb operation

Disable the option

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no network usb operation

54.1.2 network usb parms

Set USB out-of-band IP address and subnet mask.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** network usb parms <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

54.2 show

Display device options and settings.

54.2.1 show network usb

Show USB out-of-band management configuration.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show network usb

55 Power Over Ethernet (PoE) (not MCSESM-E)

55.1 inlinepower

Configure the global inline power settings.

55.1.1 inlinepower operation

Configure the global inline power administrative setting (enable or disable, default: enable).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower operation

■ no inlinepower operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no inlinepower operation

55.1.2 inlinepower slot

Configure the inline power notification (trap), threshold and power budget per slot

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower slot <P-1> budget <P-2> threshold <P-3> trap

budget: Configure the inline power budget per slot

threshold: Configure the inline power notification (trap) threshold per slot.

trap: Configure the inline power notification (trap) setting per slot.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	0..65507	Enter a number in the given range.
P-3	1..99	Enter a number in the given range.

■ no inlinepower slot

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no inlinepower slot budget threshold trap

55.1.3 inlinepower threshold

Configure the global inline power notification (trap) threshold.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower threshold <P-1>

Parameter	Value	Meaning
P-1	1..99	Enter a number in the given range.

55.1.4 inlinepower trap

Configure the global inline power notification (trap) setting .

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: inlinepower trap
- no inlinepower trap
Disable the option
- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no inlinepower trap

55.2 inlinepower

Configure inline power interface settings.

55.2.1 inlinepower allowed-classes add

Add the class to this interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower allowed-classes add <P-1>

Parameter	Value	Meaning
P-1	0	Class 0
	1	Class 1
	2	Class 2
	3	Class 3
	4	Class 4

55.2.2 inlinepower allowed-classes delete

Remove the class from this interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower allowed-classes delete <P-1>

Parameter	Value	Meaning
P-1	0	Class 0
	1	Class 1
	2	Class 2
	3	Class 3
	4	Class 4

55.2.3 inlinepower auto-shutdown-end

Configure the interface-related inline power autosutdown end time.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower auto-shutdown-end <P-1>

Parameter	Value	Meaning
P-1	string	Enter 5 alpha numerical characters (format 00:00).

55.2.4 inlinepower auto-shutdown-start

Configure the interface-related inline power autosutdown start time.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower auto-shutdown-start <P-1>

Parameter	Value	Meaning
P-1	string	Enter 5 alpha numerical characters (format 00:00).

55.2.5 inlinepower auto-shutdown-timer

Configure the interface-related inline power autosutdown timer functionality.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower auto-shutdown-timer

■ no inlinepower auto-shutdown-timer

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no inlinepower auto-shutdown-timer

55.2.6 inlinepower operation

Configure the interface-related inline power administrative setting (enable or disable, default: enable).

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** inlinepower operation

■ no inlinepower operation

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no inlinepower operation

55.2.7 inlinepower name

Configure the interface-related inline power interface name.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** inlinepower name <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

55.2.8 inlinepower priority

Configure the inline power priority for this interface. In case of power scarcity, inline power on interfaces configured with the lowest priority is dropped first. Possible values are: critical, high or low, default: low. The highest priority is critical.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** inlinepower priority <P-1>

Parameter	Value	Meaning
P-1	crit.	Set this interfaces' inline power priority to critical (highest).
	high	Set this interfaces' inline power priority to high.
	low	Set this interfaces' inline power priority to low. This is the default setting.

55.2.9 inlinepower fast-startup

Enable or disable fast startup.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** inlinepower fast-startup

- no inlinepower fast-startup
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no inlinepower fast-startup

55.2.10 inlinepower power-limit

Configure the interface related inline maximum power that is reserved for a connected powered device (PD). The power limit is ignored if it is set to 0 or it is exceeded by the maximum observed power consumption.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: inlinepower power-limit <P-1>

Parameter	Value	Meaning
P-1	0.000..30.000	PoE power limit in watts (e.g. 12.54).

55.3 show

Display device options and settings.

55.3.1 show inlinepower global

Display the inline power global settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show inlinepower global

55.3.2 show inlinepower port

Display the interface-related inline power settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show inlinepower port [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

55.3.3 show inlinepower slot

Display the slot-related inline power settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show inlinepower slot [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

56 Port Monitor

56.1 port-monitor

Configure the Port Monitor condition settings.

56.1.1 port-monitor operation

Enable or disable the port monitor.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor operation

- **no port-monitor operation**
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no port-monitor operation

56.2 port-monitor

Configure the Port Monitor condition settings.

56.2.1 port-monitor condition crc-fragments interval

Configure the measure interval in seconds (5-180s) for CRC-Fragment detection. Default 10.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition crc-fragments interval <P-1>

Parameter	Value	Meaning
P-1	5..180	Enter a number in the given range.

56.2.2 port-monitor condition crc-fragments count

Configure the CRC-Fragment counter in parts per million (1-1000000 [ppm]). Default 1000 [ppm].

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition crc-fragments count <P-1>

Parameter	Value	Meaning
P-1	1..1000000	Enter a number in the given range.

56.2.3 port-monitor condition crc-fragments mode

Enable or disable CRC-Fragments condition to trigger an action.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition crc-fragments mode

■ no port-monitor condition crc-fragments mode

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no port-monitor condition crc-fragments mode

56.2.4 port-monitor condition link-flap interval

Configure the measure interval in seconds (1-180s) for Link Flap detection. Default 10.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition link-flap interval <P-1>

Parameter	Value	Meaning
P-1	1..180	Enter a number in the given range.

56.2.5 port-monitor condition link-flap count

Configure the Link Flap counter (1-100). Default 5.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition link-flap count <P-1>

Parameter	Value	Meaning
P-1	1..100	Enter a number in the given range.

56.2.6 port-monitor condition link-flap mode

Enable or disable link-flap condition to trigger an action.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition link-flap mode

■ no port-monitor condition link-flap mode

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no port-monitor condition link-flap mode

56.2.7 port-monitor condition duplex-mismatch mode

Enable or disable duplex mismatch detection condition to trigger an action.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition duplex-mismatch mode

■ no port-monitor condition duplex-mismatch mode

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no port-monitor condition duplex-mismatch mode

56.2.8 port-monitor condition overload-detection traffic-type

Configure Overload detection condition traffic type.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition overload-detection traffic-type <P-1>

Parameter	Value	Meaning
P-1	all	All packets.
	bc	Broadcast packets.
	bc-mc	Broadcast and multicast packets.

56.2.9 port-monitor condition overload-detection unit

Configure Overload detection condition threshold type.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor condition overload-detection unit <P-1>

Parameter	Value	Meaning
P-1	pps	Packets per second.
	kbps	Kilobits per second.

56.2.10 port-monitor condition overload-detection upper-threshold

Configure Overload detection condition threshold type upper-threshold.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition overload-detection upper-threshold <P-1>

Parameter	Value	Meaning
P-1	0..10000000	Enter a number in the given range.

56.2.11 port-monitor condition overload-detection lower-threshold

Configure Overload detection condition threshold type lower-threshold.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition overload-detection lower-threshold <P-1>

Parameter	Value	Meaning
P-1	0..10000000	Enter a number in the given range.

56.2.12 port-monitor condition overload-detection polling-interval

Configure Overload detection condition detection interval.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition overload-detection polling-interval <P-1>

Parameter	Value	Meaning
P-1	1..20	Enter a number in the given range.

56.2.13 port-monitor condition overload-detection mode

Enable or disable Overload-Detection condition to trigger an action.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition overload-detection mode

■ no port-monitor condition overload-detection mode
Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no port-monitor condition overload-detection mode

56.2.14 port-monitor condition speed-duplex mode

Enable or disable link speed and duplex condition to trigger an action.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition speed-duplex mode

■ no port-monitor condition speed-duplex mode

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no port-monitor condition speed-duplex mode

56.2.15 port-monitor condition speed-duplex speed

Set speed-duplex combination.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition speed-duplex speed [<P-1>] [<P-2>] [<P-3>] [<P-4>] [<P-5>] [<P-6>]

Parameter	Value	Meaning
P-1	[hdx10]	10 Mbit/s - half duplex
P-2	[fdx10]	10 Mbit/s - full duplex
P-3	[hdx100]	100 Mbit/s - half duplex
P-4	[fdx100]	100 Mbit/s - full duplex
P-5	[fdx-1000]	1000 Mbit/s - full duplex
P-6	[fdx-2500]	2500 Mbit/s - full duplex

56.2.16 port-monitor condition speed-duplex clear

Clear the allowed speed-duplex combination list.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor condition speed-duplex clear

56.2.17 port-monitor action

Enable or disable interface on port condition.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-monitor action <P-1>

Parameter	Value	Meaning
P-1	port-disable	Disable interface on port condition.
	trap-only	Send only a trap.
	auto-disable	Enable or disable interface on port condition by AUTODIS.

56.2.18 port-monitor reset

Reset the port monitor.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-monitor reset [<P-1>]

Parameter	Value	Meaning
P-1	port	Press Enter to execute the command.

■ no port-monitor reset

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no port-monitor reset [<P-1>]

56.3 show

Display device options and settings.

56.3.1 show port-monitor operation

Display the Port Monitor operation.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor operation

56.3.2 show port-monitor brief

Display the Port Monitor summary.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor brief

56.3.3 show port-monitor overload-detection counters

Display the overload-detection counters of last interval.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor overload-detection counters

56.3.4 show port-monitor overload-detection port

Display the Port Monitor overload detection interface details.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor overload-detection port [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

56.3.5 show port-monitor speed-duplex

Display the Port Monitor link speed and duplex interface settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor speed-duplex [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

56.3.6 show port-monitor port

Display the Port Monitor interface details.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

56.3.7 show port-monitor link-flap

Display the link-flaps counts for a specific interface.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor link-flap <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

56.3.8 show port-monitor crc-fragments

Display CRC-Fragments counts for a specific interface.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-monitor crc-fragments <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

57 Port Security

57.1 port-security

Port security

57.1.1 port-security operation

Enable/Disable port security.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-security operation

■ no port-security operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no port-security operation

57.1.2 port-security mode

Configure the port security operation mode (MAC/IP based).

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** port-security mode <P-1>

Parameter	Value	Meaning
P-1	mac-based	Port security is based on given, allowed source MAC addresses.
	ip-based	Port security is based on given, allowed source IP addresses.

■ no port-security mode

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no port-security mode <P-1>

57.2 port-security

Port security

57.2.1 port-security operation

Enable/Disable port security on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security operation

■ no port-security operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no port-security operation

57.2.2 port-security max-dynamic

Set dynamic limit for the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security max-dynamic <P-1>

Parameter	Value	Meaning
P-1	0..600	Maximum number of dynamically locked MAC addresses.

57.2.3 port-security max-static

Set static limit for the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security max-static <P-1>

Parameter	Value	Meaning
P-1	0..64	Maximum number of statically locked addresses.

57.2.4 port-security mac-address add

Add static MAC address to the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security mac-address add <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	1..4042	VLAN ID

57.2.5 port-security mac-address move

Make dynamic MAC addresses static for the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security mac-address move

57.2.6 port-security mac-address delete

Remove Static MAC address from the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security mac-address delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	1..4042	VLAN ID

57.2.7 port-security ip-address add

Add static IP address to the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security ip-address add <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..4042	VLAN ID

57.2.8 port-security ip-address delete

Remove static IP address from the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security ip-address delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..4042	VLAN ID

57.2.9 port-security violation-traps

SNMP violation traps for the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: port-security violation-traps operation
[frequency <P-1>]

operation: Enable/Disable SNMP violation traps for the interface.

[frequency]: The minimum seconds between two successive violation traps on this port.

Parameter	Value	Meaning
P-1	0.3600	time in seconds

■ no port-security violation-traps

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no port-security violation-traps operation [frequency]

57.3 show

Display device options and settings.

57.3.1 show port-security global

Port Security global status

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-security global

57.3.2 show port-security interface

Display the port security information for the interface.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-security interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

57.3.3 show port-security dynamic

Display the dynamically learned MAC addresses.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show port-security dynamic <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

57.3.4 show port-security static

Display the statically locked MAC addresses.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show port-security static <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

57.3.5 show port-security violation

Display the port security violation information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show port-security violation <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

58 Precision Time Protocol (PTP)

58.1 ptp

Enable or disable the Precision Time Protocol (IEEE 1588-2008).

58.1.1 ptp operation

Enable or disable the Precision Time Protocol (IEEE 1588-2008).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp operation

■ no ptp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ptp operation

58.1.2 ptp clock-mode

Configure PTPv2 (IEEE1588-2008) clock mode. \nIf the clock mode is changed, PTP will be initialized.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp clock-mode <P-1>

Parameter	Value	Meaning
P-1	v2-boundary-clock	Specifies V2 boundary clock as mode for the local clock.
	v2-transparent-clock	Specifies V2 transparent clock as mode for the local clock.

58.1.3 ptp sync-lower-bound

Configure the lower bound for the PTP clock synchronization status in nanoseconds. If the absolute value of the offset to the master clock is smaller than the lower bound, clock's status is set to synchronized (true).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp sync-lower-bound <P-1>

Parameter	Value	Meaning
P-1	1..999999999	

58.1.4 ptp sync-upper-bound

Configure the upper bound for the PTP clock synchronization status in nanoseconds. If the absolute value of the offset to the master clock is bigger than the upper bound, the clock's status is set to unsynchronized (false).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp sync-upper-bound <P-1>

Parameter	Value	Meaning
P-1	31..1000000000	

58.1.5 ptp management

Enable or disable PTP management via PTP management messages.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp management

■ no ptp management

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ptp management

58.1.6 ptp v2-transparent-clock syntonization

Enable or disable the syntonization (frequency synchronization) of the transparent-clock.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock syntonization

■ no ptp v2-transparent-clock syntonization

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ptp v2-transparent-clock syntonization

58.1.7 ptp v2-transparent-clock network-protocol

Configure the network-protocol of the transparent-clock.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock network-protocol <P-1>

Parameter	Value	Meaning
P-1	ieee802.3	
	udp-ipv4	

58.1.8 ptp v2-transparent-clock multi-domain

Enable or disable the transparent-clock to process only the primary-domain or all domain numbers.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock multi-domain

■ no ptp v2-transparent-clock multi-domain

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ptp v2-transparent-clock multi-domain

58.1.9 ptp v2-transparent-clock sync-local-clock

Enable or disable synchronization of the local clock (also enables syntonization).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock sync-local-clock

■ no ptp v2-transparent-clock sync-local-clock

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ptp v2-transparent-clock sync-local-clock

58.1.10 ptp v2-transparent-clock delay-mechanism

Configure the delay mechanism of the transparent-clock.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock delay-mechanism <P-1>

Parameter	Value	Meaning
P-1	e2e	
	p2p	
	e2e-optimized	
	disable	

58.1.11 ptp v2-transparent-clock primary-domain

Configure the primary-domain (for syntonization) of the transparent-clock.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock primary-domain <P-1>

Parameter	Value	Meaning
P-1	0..255	Enter a number in the given range.

58.1.12 ptp v2-transparent-clock vlan

VLAN in which PTP packets are send. With a value of none all packets are send untagged.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock vlan <P-1>

Parameter	Value	Meaning
P-1	vlanId	Send ptp to vlanId Use 0 for priority only tagged frames
	none	Send all ptp packets untagged

58.1.13 ptp v2-transparent-clock vlan-priority

VLAN priority of tagged ptp packets.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock vlan-priority <P-1>

Parameter	Value	Meaning
P-1	0..7	

58.1.14 ptp v2-boundary-clock domain

Configure the PTP domain number (0..255)

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock domain <P-1>

Parameter	Value	Meaning
P-1	0..255	Enter a number in the given range.

58.1.15 ptp v2-boundary-clock priority1

Configure the priority1 value (0..255) for the BMCA

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock priority1 <P-1>

Parameter	Value	Meaning
P-1	0..255	Enter a number in the given range.

58.1.16 ptp v2-boundary-clock priority2

Configure the priority2 value (0..255) for the BMCA

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock priority2 <P-1>

Parameter	Value	Meaning
P-1	0..255	Enter a number in the given range.

58.1.17 ptp v2-boundary-clock utc-offset

Configure the current UTC offset (TAI - UTC) in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock utc-offset <P-1>

Parameter	Value	Meaning
P-1	-32768..32767	

58.1.18 ptp v2-boundary-clock utc-offset-valid

Configure the UTC offset valid flag

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock utc-offset-valid <P-1>

Parameter	Value	Meaning
P-1	true	True
	false	False

■ no ptp v2-boundary-clock utc-offset-valid

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ptp v2-boundary-clock utc-offset-valid <P-1>

58.2 ptp

Enable or disable the Precision Time Protocol (IEEE 1588-2008) on a port.

58.2.1 ptp v2-transparent-clock operation

Enable or disable the sending and receiving / processing of PTP synchronization messages.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock operation

- no ptp v2-transparent-clock operation
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no ptp v2-transparent-clock operation

58.2.2 ptp v2-transparent-clock asymmetry

Set the asymmetry of the link connected to this interface

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock asymmetry <P-1>

Parameter	Value	Meaning
P-1	- 20000000000..200000 0000	

58.2.3 ptp v2-transparent-clock pdelay-interval

Configure the Peer Delay Interval in seconds {1|2|4|8|16|32}. \nThis interval is used if delay-mechanism is set to p2p

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-transparent-clock pdelay-interval <P-1>

Parameter	Value	Meaning
P-1	1	
	2	
	4	
	8	
	16	
	32	

58.2.4 ptp v2-boundary-clock operation

Enable or disable the sending and receiving/processing of PTP synchronization messages.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock operation

- no ptp v2-boundary-clock operation
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no ptp v2-boundary-clock operation

58.2.5 ptp v2-boundary-clock pdelay-interval

Configure the Peer Delay Interval in seconds {1|2|4|8|16|32}. \nThis interval is used if delay-mechanism is set to p2p

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock pdelay-interval <P-1>

Parameter	Value	Meaning
P-1	1	
	2	
	4	
	8	
	16	
	32	

58.2.6 ptp v2-boundary-clock announce-interval

Configure the Announce Interval in seconds {1|2|4|8|16}.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock announce-interval <P-1>

Parameter	Value	Meaning
P-1	1	
	2	
	4	
	8	
	16	

58.2.7 ptp v2-boundary-clock sync-interval

Configure the Sync Interval in seconds {0.25|0.5|1|2}.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock sync-interval <P-1>

Parameter	Value	Meaning
P-1	0.125	
	0.25	
	0.5	
	1	
	2	

58.2.8 ptp v2-boundary-clock announce-timeout

Configure the Announce Receipt Timeout (2..10).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ptp v2-boundary-clock announce-timeout <P-1>

Parameter	Value	Meaning
P-1	2..10	

58.2.9 ptp v2-boundary-clock asymmetry

Set the asymmetry of the link connected to this interface

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ptp v2-boundary-clock asymmetry <P-1>`

Parameter	Value	Meaning
P-1	- 2000000000..200000 0000	

58.2.10 ptp v2-boundary-clock v1-compatibility-mode

Set the PTPv1 Hardware compatibility mode {auto|on|off}.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ptp v2-boundary-clock v1-compatibility-mode <P-1>`

Parameter	Value	Meaning
P-1	on off auto	

58.2.11 ptp v2-boundary-clock delay-mechanism

Configure the delay mechanism of the boundary-clock.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ptp v2-boundary-clock delay-mechanism <P-1>`

Parameter	Value	Meaning
P-1	e2e p2p disable	

58.2.12 ptp v2-boundary-clock network-protocol

Configure the network-protocol

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ptp v2-boundary-clock network-protocol <P-1>`

Parameter	Value	Meaning
P-1	ieee802.3 udp-ipv4	

58.2.13 ptp v2-boundary-clock vlan-priority

VLAN priority of tagged ptp packets.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** ptp v2-boundary-clock vlan-priority <P-1>

Parameter	Value	Meaning
P-1	0..7	

58.2.14 ptp v2-boundary-clock vlan

VLAN in which PTP packets are send. With a value of none all packets are send untagged.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** ptp v2-boundary-clock vlan <P-1>

Parameter	Value	Meaning
P-1	vlanId	Send ptp to vlanId Use 0 for priority only tagged frames
	none	Send all ptp packets untagged

58.3 show

Display device options and settings.

58.3.1 show ptp

Display the PTP parameters and status.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ptp [global] [v2-boundary-clock] [v2-transparent-clock] [port] [v2-transparent-clock] [v2-boundary-clock]

[global]: Display the PTP global status.

[v2-boundary-clock]: Display the PTP Boundary Clock status.

[v2-transparent-clock]: Display the PTP Transparent Clock status.

[port]: Display the PTP port values.

[v2-transparent-clock]: Display the PTP Transparent Clock port values.

[v2-boundary-clock]: Display the PTP Boundary Clock port values.

59 Password Management

59.1 passwords

Manage password policies and options.

59.1.1 passwords min-length

Set minimum password length for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-length <P-1>

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

59.1.2 passwords max-login-attempts

Set maximum login attempts for the users.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords max-login-attempts <P-1>

Parameter	Value	Meaning
P-1	0..5	Enter a number in the given range.

59.1.3 passwords min-uppercase-chars

Set minimum upper case characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-uppercase-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

59.1.4 passwords min-lowercase-chars

Set minimum lower case characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-lowercase-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

59.1.5 passwords min-numeric-chars

Set minimum numeric characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-numeric-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

59.1.6 passwords min-special-chars

Set minimum special characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-special-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

59.1.7 passwords login-attempt-period

The time period [minutes] in which the number of failed authentication attempts is counted. Value 0 disables this functionality.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords login-attempt-period <P-1>

Parameter	Value	Meaning
P-1	<0>	Disables the counting.
	<1..60>	Enter a number in the given range.

59.2 show

Display device options and settings.

59.2.1 show passwords

Display the password policies and options.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show passwords

60 Radius

60.1 authorization

Configure authorization parameters.

60.1.1 authorization network radius

Enable or disable the switch to accept VLAN assignment by the RADIUS server.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** authorization network radius

■ no authorization network radius

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** no authorization network radius

60.2 radius

Configure RADIUS parameters.

60.2.1 radius accounting mode

Enable or disable RADIUS accounting function.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** radius accounting mode

■ no radius accounting mode

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** no radius accounting mode

60.2.2 radius server attribute 4

Specifies the RADIUS client to use the NAS-IP Address attribute in the RADIUS requests.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server attribute 4 <P-1>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.

60.2.3 radius server acct add

Add a RADIUS accounting server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server acct add <P-1> ip <P-2> [name <P-3>] [port <P-4>]

ip: RADIUS accounting server IP address.

[name]: RADIUS accounting server name.

[port]: RADIUS accounting server port (default: 1813).

Parameter	Value	Meaning
P-1	1..8	Next RADIUS server valid index (it can be seen with '#show radius global' command).
P-2	A.B.C.D	IP address.
P-3	string	Enter a user-defined text, max. 32 characters.
P-4	1..65535	Enter port number between 1 and 65535

60.2.4 radius server acct delete

Delete a RADIUS accounting server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server acct delete <P-1>

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

60.2.5 radius server acct modify

Change a RADIUS accounting server parameters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server acct modify <P-1> [name <P-2>] [port <P-3>] [status <P-4>] [secret [<P-5>]] [encrypted <P-6>]

[name]: RADIUS accounting server name.

[port]: RADIUS accounting server port (default: 1813).

[status]: Enable or disable a RADIUS accounting server entry.
 [secret]: Configure the shared secret for the RADIUS accounting server.
 [encrypted]: Configure the encrypted shared secret.

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	1..65535	Enter port number between 1 and 65535
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	string	Enter a user-defined text, max. 128 characters.
P-6	string	Enter a user-defined text, max. 128 characters.

60.2.6 radius server auth add

Add a RADIUS authentication server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server auth add <P-1> ip <P-2> [name <P-3>] [port <P-4>]

ip: RADIUS authentication server IP address.

[name]: RADIUS authentication server name.

[port]: RADIUS authentication server port (default: 1812).

Parameter	Value	Meaning
P-1	1..8	Next RADIUS server valid index (it can be seen with '#show radius global' command).
P-2	A.B.C.D	IP address.
P-3	string	Enter a user-defined text, max. 32 characters.
P-4	1..65535	Enter port number between 1 and 65535

60.2.7 radius server auth delete

Delete a RADIUS authentication server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server auth delete <P-1>

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

60.2.8 radius server auth modify

Change a RADIUS authentication server parameters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server auth modify <P-1> [name <P-2>] [port <P-3>] [msgauth <P-4>] [primary <P-5>] [status <P-6>] [secret [<P-7>]] [encrypted <P-8>]

[name]: RADIUS authentication server name.

[port]: RADIUS authentication server port (default: 1812).

[msgauth]: Enable or disable the message authenticator attribute for this server.

[primary]: Configure the primary RADIUS server.

[status]: Enable or disable a RADIUS authentication server entry.

[secret]: Configure the shared secret for the RADIUS authentication server.

[encrypted]: Configure the encrypted shared secret.

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	1..65535	Enter port number between 1 and 65535
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	string	Enter a user-defined text, max. 128 characters.
P-8	string	Enter a user-defined text, max. 128 characters.

60.2.9 radius server retransmit

Configure the retransmit value for the RADIUS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server retransmit <P-1>

Parameter	Value	Meaning
P-1	1..15	Maximum number of retransmissions (default: 4).

60.2.10 radius server timeout

Configure the RADIUS server timeout value.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server timeout <P-1>

Parameter	Value	Meaning
P-1	1..30	Timeout in seconds (default: 5).

60.3 show

Display device options and settings.

60.3.1 show radius global

Display the global RADIUS configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show radius global

60.3.2 show radius auth servers

Display the configured RADIUS authentication servers.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show radius auth servers [<P-1>]

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

60.3.3 show radius auth statistics

Display the RADIUS authentication server statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show radius auth statistics <P-1>

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

60.3.4 show radius acct statistics

Display the RADIUS accounting server statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show radius acct statistics <P-1>

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

60.3.5 show radius acct servers

Display the configured RADIUS accounting servers.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show radius acct servers [<P-1>]

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

60.4 clear

Clear several items.

60.4.1 clear radius

Clear the RADIUS statistics.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clear radius <P-1>

Parameter	Value	Meaning
P-1	statistics	Clear the RADIUS statistics.

61 Redundant Coupling Protocol (RCP)

61.1 redundant-coupling

Set RCP parameters.

61.1.1 redundant-coupling operation

This command enables/disables the RCP.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling operation

■ no redundant-coupling operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no redundant-coupling operation

61.1.2 redundant-coupling timeout

Set RCP timeout in milliseconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling timeout <P-1>

Parameter	Value	Meaning
P-1	5..60000	Enter a number in the given range.

61.1.3 redundant-coupling role

Set the desired role of the current device inside the RCP.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling role <P-1>

Parameter	Value	Meaning
P-1	master	Set this device as master RCP device.
	slave	Set this device as slave RCP device.
	single	Set this device as single RCP device.
	auto	Let the RCP decide the role of this device.

61.1.4 redundant-coupling port primary inner

Set a port as primary ring inner port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling port primary inner <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

61.1.5 redundant-coupling port primary outer

Set a port as primary ring outer port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling port primary outer <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

61.1.6 redundant-coupling port secondary inner

Set a port as secondary ring inner port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling port secondary inner <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

61.1.7 redundant-coupling port secondary outer

Set a port as secondary ring outer port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: redundant-coupling port secondary outer <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

61.2 show

Display device options and settings.

61.2.1 show redundant-coupling global

Display the global configuration of the RCP.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show redundant-coupling global

61.2.2 show redundant-coupling status

Display the status of the RCP.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show redundant-coupling status

61.2.3 show redundant-coupling partner

Display the information about the coupling partner device.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show redundant-coupling partner

62 Remote Authentication

62.1 Idap

Configure LDAP settings.

62.1.1 Idap operation

Enable or disable the remote authentication operation.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap operation

- no ldap operation
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no ldap operation

62.1.2 Idap cache-timeout

Configure LDAP user cache entry timeout.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap cache-timeout <P-1>

Parameter	Value	Meaning
P-1	1..1440	Enter a number in the given range.

62.1.3 Idap flush-user-cache

Flush LDAP user cache.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap flush-user-cache <P-1>

Parameter	Value	Meaning
P-1	action	Flush the LDAP user cache.

62.1.4 Idap role-policy

Configure LDAP user role selection policy.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap role-policy <P-1>

Parameter	Value	Meaning
P-1	highest	Use the role mapping with the highest user role.
	first	Use the first matching role mapping table entry.

62.1.5 ldap basedn

Base distinguished name for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap basedn <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

62.1.6 ldap search-attr

Search attribute for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap search-attr <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 64 characters.

62.1.7 ldap bind-user

Bind-account user name for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap bind-user <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

62.1.8 ldap bind-passwd

Bind-account user password for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap bind-passwd <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 64 characters.

62.1.9 ldap default-domain

Default domain used for users without a domain name.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap default-domain <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 64 characters.

62.1.10 ldap client server add

Add a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server add <P-1> <P-2> [port <P-3>] [security <P-4>] [description <P-5>]

[port]: Set the port number of the external LDAP server.

[security]: Set the security settings for the connection to external LDAP server.

[description]: Description of the external LDAP server.

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.
P-2	A.B.C.D	IP address.
P-3	1..65535	Port number of LDAP Server.
P-4	none ssl startTLS	
P-5	string	Enter a user-defined text, max. 100 characters.

62.1.11 ldap client server delete

Delete a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server delete <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

62.1.12 ldap client server enable

Enable a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server enable <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

62.1.13 ldap client server disable

Disable a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server disable <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

62.1.14 ldap client server modify

Modify a LDAP client server connection.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: ldap client server modify <P-1> [addr <P-2>] [port <P-3>] [security <P-4>] [description <P-5>]
- [addr]: Modify the host address of the external LDAP server.
[port]: Modify the port number of the external LDAP server.
[security]: Modify the security settings for the connection to external LDAP server.
[description]: Modify the description of the external LDAP server.

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.
P-2	A.B.C.D	IP address.
P-3	1..65535	Port number of LDAP Server.
P-4	none ssl startTLS	
P-5	string	Enter a user-defined text, max. 100 characters.

62.1.15 ldap mapping add

Add a LDAP mapping entry.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: ldap mapping add <P-1> access-role <P-2> mapping-type <P-3> mapping-parameter <P-4>
- access-role: Access role type.
mapping-type: Role mapping type.
mapping-parameter: Role mapping parameter.

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

Parameter	Value	Meaning
P-2	slot no./port no.	
P-3	attribute group	
P-4	string	Enter a user-defined text, max. 255 characters.

62.1.16 ldap mapping delete

Delete a LDAP role mapping entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap mapping delete <P-1>

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

62.1.17 ldap mapping enable

Activate a LDAP role mapping entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap mapping enable <P-1>

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

62.1.18 ldap mapping disable

Deactivate a LDAP role mapping entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap mapping disable <P-1>

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

62.2 show

Display device options and settings.

62.2.1 show ldap global

Display the LDAP configuration parameters and information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ldap global

62.2.2 show ldap client server

Display the LDAP client server connections.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ldap client server [<P-1>]

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

62.2.3 show ldap mapping

Display the LDAP role mapping entries.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ldap mapping [<P-1>]

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

62.3 copy

Copy different kinds of items.

62.3.1 copy ldapcacert remote

Copy CA certificate file (*.pem) from the remote AD server to the specified destination.

- ▶ Mode: Privileged Exec Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: copy ldapcacert remote <P-1> nvm [<P-2>]
- nvm: Copy CA certificate file (*.pem) from the remote AD server to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

62.3.2 copy ldapcert envm

Copy CA certificate file (*.pem) from external non-volatile memory to the specified destination.

▶ **Mode:** Privileged Exec Mode

▶ **Privilege Level:** Administrator

▶ **Format:** copy ldapcert envm <P-1> nvm [<P-2>]

nvm: Copy CA certificate file (*.pem) from external non-volatile memory to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

63 Remote Monitoring (RMON)

63.1 rmon-alarm

Create a RMON alarm action.

63.1.1 rmon-alarm add

Add RMON alarm.

- ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** rmon-alarm add <P-1> [mib-variable <P-2>] [rising-threshold <P-3>] [falling-threshold <P-4>]
- [mib-variable]: MIB variable
[rising-threshold]: Rising threshold
[falling-threshold]: Falling threshold

Parameter	Value	Meaning
P-1	1..150	Enter an index that uniquely identifies an entry in the alarm table.
P-2	string	Enter an object identifier of the particular variable to be sampled, max. 32 characters.
P-3	1..2147483647	Enter the rising threshold for the sampled statistic.
P-4	1..2147483647	Enter the falling threshold for the sampled statistic.

63.1.2 rmon-alarm enable

Enable RMON alarm.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** rmon-alarm enable <P-1>

Parameter	Value	Meaning
P-1	1..150	Enter an index that uniquely identifies an entry in the alarm table.

63.1.3 rmon-alarm disable

Disable RMON alarm.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** rmon-alarm disable <P-1>

Parameter	Value	Meaning
P-1	1..150	Enter an index that uniquely identifies an entry in the alarm table.

63.1.4 rmon-alarm delete

Delete RMON alarm.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: rmon-alarm delete <P-1>

Parameter	Value	Meaning
P-1	1..150	Enter an index that uniquely identifies an entry in the alarm table.

63.1.5 rmon-alarm modify

Modify RMON alarm parameters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: rmon-alarm modify <P-1> [mib-variable <P-2>] [rising-threshold <P-3>] [falling-threshold <P-4>] [interval <P-5>] [sample-type <P-6>] [startup-alarm <P-7>] [rising-event <P-8>] [falling-event <P-9>]

[mib-variable]: Enter the alarm MIB variable.

[rising-threshold]: Enter the alarm rising threshold.

[falling-threshold]: Enter the alarm falling-threshold.

[interval]: Enter the alarm interval in seconds over which the data is sampled.

[sample-type]: Enter the alarm method of sampling the selected variable.

[startup-alarm]: Enter the alarm type.

[rising-event]: Enter the alarm rising-event index.

[falling-event]: Enter the alarm falling-event index.

Parameter	Value	Meaning
P-1	1..150	Enter an index that uniquely identifies an entry in the alarm table.
P-2	string	Enter an object identifier of the particular variable to be sampled, max. 32 characters.
P-3	1..2147483647	Enter the rising threshold for the sampled statistic.
P-4	1..2147483647	Enter the falling threshold for the sampled statistic.
P-5	1..2147483647	Enter the interval in seconds over which the data is sampled and compared with the rising and falling thresholds.
P-6	absoluteValue	Variable is compared directly with the thresholds.
	deltaValue	Variable is subtracted from the current value and the difference compared with the thresholds.

Parameter	Value	Meaning
P-7	risingAlarm	Single rising alarm generated when the sample is greater than or equal to the rising threshold.
	fallingAlarm	Single falling alarm generated when the sample is less than or equal to the falling threshold.
	risingOrFallingAlarm	Single Rising alarm generated when the sample is greater than or equal to rising threshold and single falling alarm generated when the sample is less than or equal to falling threshold.
P-8	1..65535	Enter the index of the event entry that is used when a rising threshold is crossed.
P-9	1..65535	Enter the index of the event entry that is used when a falling threshold is crossed.

63.2 show

Display device options and settings.

63.2.1 show rmon statistics

Display the RMON statistics configuration.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show rmon statistics [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

63.2.2 show rmon alarm

Display the configuration on RMON alarms.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show rmon alarm

64 Script File

64.1 script

CLI Script File.

64.1.1 script apply

Executes the CLI script file available in the device.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script apply <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

64.1.2 script validate

Only validates the CLI script file available in the device.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script validate <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

64.1.3 script list system

List all the script files available in the device memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script list system

64.1.4 script list envm

List all the script files available in external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script list envm

64.1.5 script delete

Delete the CLI script files.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script delete [<P-1>]

Parameter	Value	Meaning
P-1	string	Filename.

64.2 copy

Copy different kinds of items.

64.2.1 copy script envm

Copy script file from external non-volatile memory to specified destination.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: `copy script envm <P-1> running-config nvm <P-2>`

`running-config`: Copy script file from external non-volatile memory to the `running-config`.

`nvm`: Copy script file from external non-volatile memory to the non-volatile memory.

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	Enter a user-defined text, max. 32 characters.

64.2.2 copy script remote

Copy script file from server to specified destination.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: `copy script remote <P-1> running-config nvm <P-2>`

`running-config`: Copy script file from file server to `running-config`.

`nvm`: Copy script file to non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 32 characters.

64.2.3 copy script nvm

Copy Script file from non-volatile memory to the specified destination.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: `copy script nvm <P-1> running-config envm <P-2> remote <P-3>`

running-config: Copy Script file from non-volatile system memory to running-config.

envm: Copy Script file to external non-volatile memory device.

remote: Copy Script file to file server.

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	string	Enter a user-defined text, max. 128 characters.

64.2.4 copy script running-config nvm

Copy running configuration to non-volatile memory.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: copy script running-config nvm <P-1> [all]

[all]: Copy all running configuration to non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

64.2.5 copy script running-config envm

Copy running configuration to external non-volatile memory device.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: copy script running-config envm <P-1> [all]

[all]: Copy all running configuration to external non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.

64.2.6 copy script running-config remote

Copy running configuration to a file server.

▶ Mode: Privileged Exec Mode

▶ Privilege Level: Administrator

▶ Format: copy script running-config remote <P-1> [all]

[all]: Copy all running configuration to file server.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

64.3 show

Display device options and settings.

64.3.1 show script envm

Display the content of the CLI script file present in the envm.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show script envm <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

64.3.2 show script system

Display the content of the CLI script file present in the device.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show script system <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

65 Selftest

65.1 selftest

Configure the selftest settings.

65.1.1 selftest action

Configure the action that a selftest component should take.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** selftest action <P-1> <P-2>

Parameter	Value	Meaning
P-1	task	Configure the action for task errors.
	resource	Configure the action for lack of resources.
	software	Configure the action for broken software integrity.
	hardware	Configure the action for detected hardware errors.
P-2	log-only	Write a message to the logging file.
	send-trap	Send a trap to the management station.
	reboot	Reboot the device.

65.1.2 selftest ramtest

Enable or disable the RAM selftest on cold start of the device. When disabled the device booting time is reduced.

- ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** selftest ramtest
-
- **no selftest ramtest**
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** no selftest ramtest

65.1.3 selftest system-monitor

Enable or disable the System Monitor 1 access during the boot phase.

Please note: If the System Monitor is disabled it is possible to lose access to the device permanently in case of losing administrator password or mis-configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: selftest system-monitor

■ no selftest system-monitor

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no selftest system-monitor

65.1.4 selftest boot-default-on-error

Enable or disable loading of the default configuration in case there is any error loading the configuration during boot phase. If disabled the system will be halted.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: selftest boot-default-on-error

■ no selftest boot-default-on-error

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no selftest boot-default-on-error

65.2 show

Display device options and settings.

65.2.1 show selftest action

Display the actions the device takes if an error occurs.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show selftest action

65.2.2 show selftest settings

Display the selftest settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show selftest settings

66 Small Form-factor Pluggable (SFP)

66.1 show

Display device options and settings.

66.1.1 show sfp

Display the information about the plugged SFP modules.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show sfp [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

67 Signal Contact

67.1 signal-contact

Configure the signal contact settings.

67.1.1 signal-contact mode

Configure the Signal Contact mode setting.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> mode <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	manual	The signal contact's status is determined by the\nassociated manual setting (subcommand 'state').
	monitor	The signal contact's status is determined by the\nassociated monitor settings.
	device-status	The signal contact's status is determined by the\ndevice status.
	security-status	The signal contact's status is determined by the\nsecurity status.
	dev-sec-status	The signal contact's status is determined by the\ndevice status and security status.

67.1.2 signal-contact monitor link-failure

Sets the monitoring of the network connection(s).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor link-failure

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor link-failure

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor link-failure

67.1.3 signal-contact monitor envm-not-in-sync

Sets the monitoring whether the external non-volatile memory device is in sync with the running configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor envm-not-in-sync

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor envm-not-in-sync

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor envm-not-in-sync

67.1.4 signal-contact monitor envm-removal

Sets the monitoring of the external non-volatile memory device removal.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor envm-removal

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor envm-removal

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor envm-removal

67.1.5 signal-contact monitor temperature

Sets the monitoring of the device temperature.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor temperature

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor temperature

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor temperature

67.1.6 signal-contact monitor ring-redundancy

Sets the monitoring of the ring-redundancy.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor ring-redundancy

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor ring-redundancy

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor ring-redundancy

67.1.7 signal-contact monitor power-supply

Sets the monitoring of the power supply(s).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor power-supply <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	1..2	Number of power supply.

■ no signal-contact monitor power-supply

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor power-supply <P-2>

67.1.8 signal-contact monitor ethernet-loops

Sets the monitoring for Ethernet loops.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor ethernet-loops

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor ethernet-loops

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor ethernet-loops

67.1.9 signal-contact state

Configure the Signal Contact manual state (only takes immediate effect in manual mode).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> state <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	open	Open the signal contact (only takes effect in the manual mode).
	close	Close the signal contact (only takes effect in the manual mode).

67.1.10 signal-contact trap

Configure if a trap is sent when the Signal Contact changes state (in monitor mode).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> trap

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact trap

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> trap

67.2 signal-contact

Configure the signal contact interface settings.

67.2.1 signal-contact link-alarm

Configure the monitoring of the specific network ports.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> link-alarm

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact link-alarm

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> link-alarm

67.3 show

Display device options and settings.

67.3.1 show signal-contact

Display the signal contact settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show signal-contact <P-1> mode monitor state trap link-alarm events all

mode: Display the signal contact mode.

monitor: Display the signal contact monitor settings.

state: Display the signal contact state (open/close).\nNote: This covers the signal contact's administrative\nsetting as well as its actual state.

trap: Display the signal contact trap information and settings.

link-alarm: Display the settings of the monitoring of the specific\nnetwork ports.

events: Display the occurred device status events.

all: Display the signal contact settings for the specified signal contact.

Parameter	Value	Meaning
P-1	signal contact no.	

68 Switched Monitoring (SMON)

68.1 monitor

Configure port mirroring.

68.1.1 monitor session

Configure port mirroring.

▶ **Mode:** Global Config Mode

▶ **Privilege Level:** Operator

▶ **Format:** monitor session <P-1> destination interface <P-2> [secondary-interface <P-3>] source interface <P-4> direction <P-5> operation mode allow-mgmt

destination: Configure the probe interface.

interface: Configure interface.

[secondary-interface]: Configure secondary interface.

source: Configure the source interface.

interface: Configure interface

direction: Select interface.

operation: Enable/disable mirroring on an interface.

mode: Enable/Disable port mirroring session. Note: does not affect the source or destination interfaces.

allow-mgmt: Enable/Disable port responsiveness while mirroring. Note: does not affect the source interfaces.

Parameter	Value	Meaning
P-1	1	Monitor session index.
P-2	slot no./port no.	
P-3	slot no./port no.	
P-4	slot no./port no.	
P-5	none	None.
	tx	Packets that are transmitted on the source interfaces are copied to the destination interface.
	rx	Packets that are received on the source interfaces are copied to the destination interface.
	txrx	Packets that are transmitted or received on the source interfaces are copied to the destination interface.

- no monitor session
 - Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no monitor session <P-1> destination interface [secondary-interface] source interface <P-4> direction operation mode allow-mgmt

68.2 show

Display device options and settings.

68.2.1 show monitor session

Display port monitor session settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show monitor session <P-1>

Parameter	Value	Meaning
P-1	1	Monitor session index.

68.3 clear

Clear several items.

68.3.1 clear monitor session

Delete configuration for this session.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear monitor session <P-1>

Parameter	Value	Meaning
P-1	1	Monitor session index.

69 Simple Network Management Protocol (SNMP)

69.1 snmp

Configure of SNMP versions and traps.

69.1.1 snmp access version v1

Enable or disable SNMP version V1.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access version v1

■ no snmp access version v1

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no snmp access version v1

69.1.2 snmp access version v2

Enable or disable SNMP version V2.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access version v2

■ no snmp access version v2

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no snmp access version v2

69.1.3 snmp access version v3

Enable or disable SNMP version V3.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access version v3

- no snmp access version v3
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no snmp access version v3

69.1.4 snmp access port

Configure the SNMP access port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the SNMP server (default: 161).

69.1.5 snmp access snmp-over-802

Configure SNMPover802.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access snmp-over-802

- no snmp access snmp-over-802
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: no snmp access snmp-over-802

69.2 show

Display device options and settings.

69.2.1 show snmp access

Display the SNMP access configuration settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show snmp access

70 SNMP Community

70.1 snmp

Configure of SNMP versions and traps.

70.1.1 snmp community ro

SNMP v1/v2 read-only community.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp community ro

70.1.2 snmp community rw

SNMP v1/v2 read-write community.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp community rw

70.2 show

Display device options and settings.

70.2.1 show snmp community

Display the SNMP v1/2 community.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show snmp community

71 SNMP Logging

71.1 logging

Logging configuration.

71.1.1 logging snmp-request get operation

Enable or disable logging of SNMP GET or SET requests.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** logging snmp-request get operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable logging of SNMP GET or SET requests.
	disable	Disable logging of SNMP GET or SET requests.

■ no logging snmp-request get operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** no logging snmp-request get operation <P-1>

71.1.2 logging snmp-request get severity

Define severity level.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** logging snmp-request get severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
6	Same as informational	
7	Same as debug	

71.1.3 logging snmp-request set operation

Enable or disable logging of SNMP GET or SET requests.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging snmp-request set operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable logging of SNMP GET or SET requests.
	disable	Disable logging of SNMP GET or SET requests.

■ no logging snmp-request set operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging snmp-request set operation <P-1>

71.1.4 logging snmp-request set severity

Define severity level.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging snmp-request set severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has been detected.
	alert	Take immediate action. Potential unrecoverable failure of a component. Potential system failure.
	critical	Recoverable failure of a component has been detected that may lead to potential system failure.
	error	Error conditions detected. Potential failure of a component recoverable.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
6	Same as informational	
7	Same as debug	

71.2 show

Display device options and settings.

71.2.1 show logging snmp

Display the SNMP logging settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging snmp

72 Simple Network Time Protocol (SNTP)

72.1 sntp

Configure SNTP settings.

72.1.1 sntp client operation

Enable or disable the SNTP client

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client operation

■ no sntp client operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no sntp client operation

72.1.2 sntp client operating-mode

Set the operating mode of the SNTP client. In unicast-mode, the client sends a request to the SNTP Server. \n\nIn broadcast-mode, the client waits for a broadcast message from the SNTP Server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client operating-mode <P-1>

Parameter	Value	Meaning
P-1	unicast	Set the operating mode to unicast.
	broadcast	Set the operating mode to broadcast.

72.1.3 sntp client request-interval

Set the SNTP client request interval in seconds. \nThe request-interval is only used in the operating-mode unicast.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client request-interval <P-1>

Parameter	Value	Meaning
P-1	5..3600	Enter a number in the given range.

72.1.4 sntp client broadcast-rcv-timeout

Set the SNTP client broadcast receive timeout in seconds. \n\nThe broadcast receive timeout is only used in the operating-mode broadcast.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client broadcast-rcv-timeout <P-1>

Parameter	Value	Meaning
P-1	128..2048	Enter a number in the given range.

72.1.5 sntp client disable-after-sync

If this option is activated, the SNTP client disables itself \n\nonce it is synchronized to a SNTP server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client disable-after-sync

■ no sntp client disable-after-sync

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no sntp client disable-after-sync

72.1.6 sntp client server add

Add a SNTP client server connection

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client server add <P-1> <P-2> [port <P-3>] [description <P-4>]

[port]: Set the port number of the external time server.

[description]: Description of the external time server

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.
P-2	A.B.C.D	IP address.
P-3	1..65535	Port number of SNTP Server (default 123).
P-4	string	Enter a user-defined text, max. 32 characters.

72.1.7 sntp client server delete

delete a SNTP client server connection

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client server delete <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

72.1.8 sntp client server mode

Enable or disable a SNTP client server connection

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp client server mode <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

■ no sntp client server mode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no sntp client server mode <P-1>

72.1.9 sntp server operation

Enable or disable the SNTP server

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server operation

■ no sntp server operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no sntp server operation

72.1.10 sntp server port

Set the local socket port number used to listen for client requests.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of SNTP Server (default 123).

72.1.11 sntp server only-if-synchronized

Set the disabling of the SNTP server function,\nif it is not synchronized to another external time reference

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server only-if-synchronized

■ no sntp server only-if-synchronized

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no sntp server only-if-synchronized

72.1.12 sntp server broadcast operation

Enable or disable the SNTP server broadcast mode

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server broadcast operation

■ no sntp server broadcast operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no sntp server broadcast operation

72.1.13 sntp server broadcast address

Set the SNTP server's broadcast or multicast IP address\n(default: 0.0.0.0 (none)).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server broadcast address <P-1>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.

72.1.14 sntp server broadcast port

Set the destination socket port number used to send\nbroadcast or multicast messages to the client.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server broadcast port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of SNTP Server (default 123).

72.1.15 sntp server broadcast interval

Set the SNTP server's interval in seconds for sending\nbroadcast or multicast messages.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server broadcast interval <P-1>

Parameter	Value	Meaning
P-1	64..1024	Enter a number in the given range.

72.1.16 sntp server broadcast vlan

Set the SNTP server's broadcast VLAN ID used for sending\nbroadcast or multicast messages.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: sntp server broadcast vlan <P-1>

Parameter	Value	Meaning
P-1	0..4042	Enter the VLAN ID. Entering of ID 0 uses the management VLAN ID.

72.2 show

Display device options and settings.

72.2.1 show sntp global

Display the SNTP configuration parameters and information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sntp global

72.2.2 show sntp client status

Display the SNTP client status.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sntp client status

72.2.3 show sntp client server

Display the SNTP client server connections.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sntp client server [<P-1>]

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

72.2.4 show sntp server status

Display the SNTP server configuration parameters and information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sntp server status

72.2.5 show sntp server broadcast

Display the SNTP server broadcast configuration parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sntp server broadcast

73 Spanning Tree

73.1 spanning-tree

Enable or disable the Spanning Tree protocol.

73.1.1 spanning-tree drstp trap-mode

Enable or disable STP traps on this device.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree drstp trap-mode

■ no spanning-tree drstp trap-mode

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no spanning-tree drstp trap-mode

73.1.2 spanning-tree drstp bpdu-filter

Enable or disable the BPDU filter on the edge ports.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree drstp bpdu-filter

■ no spanning-tree drstp bpdu-filter

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no spanning-tree drstp bpdu-filter

73.1.3 spanning-tree drstp bpdu-guard

Enable or disable the BPDU guard on the edge ports.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree drstp bpdu-guard

■ no spanning-tree drstp bpdu-guard

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no spanning-tree drstp bpdu-guard

73.1.4 spanning-tree drstp forward-time

Set the Bridge Forward Delay parameter [s].

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp forward-time <P-1>

Parameter	Value	Meaning
P-1	4..30	Enter the bridge forward delay as an integer.

73.1.5 spanning-tree drstp hello-time

Set the Hello Time parameter [s].

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp hello-time <P-1>

Parameter	Value	Meaning
P-1	1..2	Set the Hello Time parameter (unit: seconds).

73.1.6 spanning-tree drstp hold-count

Set the bridge hold count parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp hold-count <P-1>

Parameter	Value	Meaning
P-1	1..40	Set bridge hold count parameter.

73.1.7 spanning-tree drstp max-age

Set the bridge Max Age parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp max-age <P-1>

Parameter	Value	Meaning
P-1	6..40	Set the bridge Max Age parameter.

73.1.8 spanning-tree drstp max-hops

Set the bridge Max Hops parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp max-hops <P-1>

Parameter	Value	Meaning
P-1	6..40	Set the bridge Max Hops parameter.

73.1.9 spanning-tree drstp mst priority

Specify the bridge priority used by a MST instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp mst priority <P-1> <P-2>

Parameter	Value	Meaning
P-1	0..0	Enter the multiple spanning tree ID 0 (0 is for CIST and RSTP).
P-2	0..61440	Set the Mst Bridge priority.

73.1.10 spanning-tree drstp ring-only-mode operation

Enable or disable the RSTP Ring Only Mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp ring-only-mode operation

■ no spanning-tree drstp ring-only-mode operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no spanning-tree drstp ring-only-mode operation

73.1.11 spanning-tree drstp ring-only-mode first-port

Configure the first ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp ring-only-mode first-port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

73.1.12 spanning-tree drstp ring-only-mode second-port

Configure the second ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree drstp ring-only-mode second-port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

73.1.13 spanning-tree operation

Enable or disable the function.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: spanning-tree operation
-
- no spanning-tree operation
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree operation

73.1.14 spanning-tree trap-mode

Enable or disable STP traps on this device.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: spanning-tree trap-mode
-
- no spanning-tree trap-mode
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree trap-mode

73.1.15 spanning-tree bpdu-filter

Enable or disable the BPDU filter on the edge ports.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: spanning-tree bpdu-filter
-
- no spanning-tree bpdu-filter
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree bpdu-filter

73.1.16 spanning-tree bpdu-guard

Enable or disable the BPDU guard on the edge ports.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree bpdu-guard

■ no spanning-tree bpdu-guard

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no spanning-tree bpdu-guard

73.1.17 spanning-tree bpdu-migration-check

Force the specified port to transmit RST or MST BPDUs.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree bpdu-migration-check <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

73.1.18 spanning-tree forceversion

Set the force protocol version parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree forceversion <P-1>

Parameter	Value	Meaning
P-1	stp	Spanning Tree Protocol (STP).
	rstp	Rapid Spanning Tree Protocol (RSTP).
	mstp	Multiple Spanning Tree Protocol (MSTP).

73.1.19 spanning-tree forward-time

Set the Bridge Forward Delay parameter [s].

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree forward-time <P-1>

Parameter	Value	Meaning
P-1	4..30	Enter the bridge forward delay as an integer.

73.1.20 spanning-tree hello-time

Set the Hello Time parameter [s].

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree hello-time <P-1>

Parameter	Value	Meaning
P-1	1..2	Set the Hello Time parameter (unit: seconds).

73.1.21 spanning-tree hold-count

Set the bridge hold count parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree hold-count <P-1>

Parameter	Value	Meaning
P-1	1..40	Set bridge hold count parameter.

73.1.22 spanning-tree max-age

Set the bridge Max Age parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree max-age <P-1>

Parameter	Value	Meaning
P-1	6..40	Set the bridge Max Age parameter.

73.1.23 spanning-tree ring-only-mode operation

Enable or disable the RSTP Ring Only Mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree ring-only-mode operation

■ no spanning-tree ring-only-mode operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no spanning-tree ring-only-mode operation

73.1.24 spanning-tree ring-only-mode first-port

Configure the first ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree ring-only-mode first-port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

73.1.25 spanning-tree ring-only-mode second-port

Configure the second ring port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree ring-only-mode second-port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

73.1.26 spanning-tree max-hops

Set the bridge Max Hops parameter.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree max-hops <P-1>

Parameter	Value	Meaning
P-1	6..40	Set the bridge Max Hops parameter.

73.1.27 spanning-tree mst priority

This command is left for compatibility issues with scripting. Please use 'instance modify 0 priority' command to set the bridge priority for CIST.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree mst priority <P-1> <P-2>

Parameter	Value	Meaning
P-1	0..0	Enter the multiple spanning tree ID 0 (0 is for CIST and RSTP).
P-2	0..61440	Set the Mst Bridge priority.

73.1.28 spanning-tree mst instance add

Create a MST instance

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree mst instance add <P-1> [priority <P-2>]

[priority]: Specify the bridge priority used by a MST instance.

Parameter	Value	Meaning
P-1	0..4094	Enter a multiple spanning tree ID.
P-2	0..61440	Set the Mst Bridge priority.

73.1.29 spanning-tree mst instance delete

Destroy a MST instance

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree mst instance delete <P-1>

Parameter	Value	Meaning
P-1	1..4094	Enter a multiple spanning tree ID.

73.1.30 spanning-tree mst instance modify

Modify a MST instance

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree mst instance modify <P-1> priority <P-2> vlan add <P-3> delete <P-4>

priority: Specify the bridge priority used by a MST instance.

vlan: Add or remove a VLAN from a MST instance.

add: Add a VLAN to MST instance.

delete: Delete a VLAN from an MST instance.

Parameter	Value	Meaning
P-1	0..4094	Enter a multiple spanning tree ID.
P-2	0..61440	Set the Mst Bridge priority.
P-3	1..4042	Select the MST bridge VLAN.
P-4	1..4042	Select the MST bridge VLAN.

73.1.31 spanning-tree configuration name

Set the MST configuration name.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree configuration name <P-1>

Parameter	Value	Meaning
P-1	string	<name> Enter a valid name for the configuration.

73.1.32 spanning-tree configuration revision

Set the MST configuration identifier revision level.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree configuration revision <P-1>

Parameter	Value	Meaning
P-1	0..65535	Enter a revision number between 0 and 65535.

73.2 spanning-tree

Enable or disable the Spanning Tree protocol on a port.

73.2.1 spanning-tree mode

Enable or disable the function.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree mode

■ no spanning-tree mode

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no spanning-tree mode

73.2.2 spanning-tree bpdu-flood

Enable or disable BPDU flooding on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree bpdu-flood

■ no spanning-tree bpdu-flood

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no spanning-tree bpdu-flood

73.2.3 spanning-tree bpdu-filter

Enable or disable BPDU filter on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree bpdu-filter

■ no spanning-tree bpdu-filter

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no spanning-tree bpdu-filter

73.2.4 spanning-tree edge-auto

Enable or disable auto edge detection on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree edge-auto

- no spanning-tree edge-auto
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree edge-auto

73.2.5 spanning-tree edge-port

Enable or disable edge port usage on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree edge-port

- no spanning-tree edge-port
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree edge-port

73.2.6 spanning-tree guard-loop

Enable or disable the loop guard on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree guard-loop

- no spanning-tree guard-loop
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree guard-loop

73.2.7 spanning-tree guard-root

Enable or disable the root guard on a port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: spanning-tree guard-root

- no spanning-tree guard-root
Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no spanning-tree guard-root

73.2.8 spanning-tree guard-tcn

Enable or disable the TCN guard on a port.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree guard-tcn

■ no spanning-tree guard-tcn

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no spanning-tree guard-tcn

73.2.9 spanning-tree cost

Specify the port path cost for STP, RSTP and CIST.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree cost <P-1>

Parameter	Value	Meaning
P-1	0..200000000	Specify the port path cost.

73.2.10 spanning-tree priority

Specify the port priority for STP, RSTP and CIST.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree priority <P-1>

Parameter	Value	Meaning
P-1	0..240	Specify the port priority.

73.2.11 spanning-tree mst

MST instance related configuration.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** spanning-tree mst <P-1> cost <P-2> priority <P-3>

cost: Specify the port path cost.

priority: Specify the port priority.

Parameter	Value	Meaning
P-1	0..4094	Enter a multiple spanning tree ID.
P-2	0-200000000	Set the cost value. The value of 0 has the same effect as auto.
	auto	Set the pathcost value automatically on the basis of Link Speed.
P-3	0..240	Specify the port priority.

73.3 show

Display device options and settings.

73.3.1 show spanning-tree global

Display the Common and Internal Spanning Tree information and settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show spanning-tree global

73.3.2 show spanning-tree drstp

Display the second instance Common and Internal Spanning Tree information and settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show spanning-tree drstp

73.3.3 show spanning-tree mst instance

Display summarized information and settings for all ports in an MST instance.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show spanning-tree mst instance [<P-1>]

Parameter	Value	Meaning
P-1	0..4094	Enter a multiple spanning tree ID.

73.3.4 show spanning-tree mst port

Display summarized information and settings for all ports in an MST instance.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show spanning-tree mst port [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	0..4094	Enter a multiple spanning tree ID.
P-2	slot no./port no.	

73.3.5 show spanning-tree mst vlan

Display summarized information and settings for all ports in an MST instance.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show spanning-tree mst vlan [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	0..4094	Enter a multiple spanning tree ID.
P-2	1..4042	Select the MST bridge VLAN.

73.3.6 show spanning-tree port

Spanning Tree information and settings for an interface.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show spanning-tree port <P-1>

Parameter	Value	Meaning
P-1	slot no./port no.	

74 Subring Management

74.1 sub-ring

Sub-ring manager operations.

74.1.1 sub-ring operation

Enable or disable the global sub-ring manager functionality on this device.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** sub-ring operation

- **no sub-ring operation**
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no sub-ring operation

74.1.2 sub-ring add

Creates a new sub-ring domain with the value id.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** sub-ring add <P-1> [mode <P-2>] [vlan <P-3>] [port <P-4>] [name <P-5>] [mrp-domain <P-6>]

[mode]: Set operating mode for the sub-ring domain with the value id.

[vlan]: Set vlan id for the sub-ring domain with the value id.

[port]: Set the port for the sub-ring domain with the value id.

[name]: Set name for the sub-ring domain with the value id.

[mrp-domain]: MRP domain ID. Format: 16 bytes in decimal notation.\n(Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

Parameter	Value	Meaning
P-1	1..40000	SRM Domain Id.
P-2	manager	The entity takes on the role of a Sub-Ring Manager.
	redundant-manager	The entity takes on the role of the Sub-Ring Manager and blocks the ring port if the sub-ring is closed.
	single-manager	The single-manager has both ends of a sub-ring connected to its ports and blocks one of these ends if the sub-ring is closed.
P-3	0..4042	Enter the VLAN ID. Entering of ID 0 disables the feature.
P-4	slot no./port no.	

Parameter	Value	Meaning
P-5	string	Enter a user-defined text, max. 255 characters.
P-6	string	<domain id> MRP domain ID. Format: 16 bytes in decimal notation.\n(Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

74.1.3 sub-ring delete

Deletes the subring domain with the value id.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: sub-ring delete <P-1>

Parameter	Value	Meaning
P-1	1..40000	SRM Domain Id.

74.1.4 sub-ring enable

Enable the sub-ring domain with the value id.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: sub-ring enable <P-1>

Parameter	Value	Meaning
P-1	1..40000	SRM Domain Id.

74.1.5 sub-ring disable

Disable the sub-ring domain with the value id.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: sub-ring disable <P-1>

Parameter	Value	Meaning
P-1	1..40000	SRM Domain Id.

74.1.6 sub-ring modify

Modify parameters of the sub-ring domain with the value id.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: sub-ring modify <P-1> [mode <P-2>] [vlan <P-3>] [port <P-4>] [name <P-5>] [mrp-domain <P-6>]

[mode]: Set operating mode for the sub-ring domain with the value id.

[vlan]: Set vlan id for the sub-ring domain with the value id.

[port]: Set the port for the sub-ring domain with the value id.

[name]: Set name for the sub-ring domain with the value id.

[mrp-domain]: MRP domain ID. Format: 16 bytes in decimal notation.\n(Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

Parameter	Value	Meaning
P-1	1..40000	SRM Domain Id.
P-2	manager	The entity takes on the role of a Sub-Ring Manager.
	redundant-manager	The entity takes on the role of the Sub-Ring Manager and blocks the ring port if the sub-ring is closed.
	single-manager	The single-manager has both ends of a sub-ring connected to its ports and blocks one of these ends if the sub-ring is closed.
P-3	0..4042	Enter the VLAN ID. Entering of ID 0 disables the feature.
P-4	slot no./port no.	
P-5	string	Enter a user-defined text, max. 255 characters.
P-6	string	<domain id> MRP domain ID. Format: 16 bytes in decimal notation.\n(Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

74.2 show

Display device options and settings.

74.2.1 show sub-ring global

Display the Sub-ring global parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sub-ring global

74.2.2 show sub-ring ring

Display the Sub-ring detailed parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show sub-ring ring [<P-1>]

Parameter	Value	Meaning
P-1	1..40000	SRM Domain Id.

75 Secure Shell (SSH)

75.1 ssh

Set SSH parameters.

75.1.1 ssh server

Enable or disable the SSH server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh server

■ no ssh server

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ssh server

75.1.2 ssh timeout

Set the SSH connection idle timeout in minutes (default: 5).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Idle timeout of a session in minutes (default: 5).

75.1.3 ssh port

Set the SSH server port number (default: 22).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the SSH server (default: 22).

75.1.4 ssh max-sessions

Set the maximum number of concurrent SSH sessions (default: 5).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh max-sessions <P-1>

Parameter	Value	Meaning
P-1	1..5	Maximum number of concurrent SSH sessions.

75.1.5 ssh key rsa

Generate or delete RSA key

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh key rsa <P-1>

Parameter	Value	Meaning
P-1	generate	Generates the item
	delete	Deletes the item

75.1.6 ssh key fingerprint-type

Configure fingerprint type

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh key fingerprint-type <P-1>

Parameter	Value	Meaning
P-1	md5	Configure md5 fingerprint of the existing SSH host key
	sha256	Configure sha256 fingerprint of the existing SSH host key.

75.2 copy

Copy different kinds of items.

75.2.1 copy sshkey remote

Copy the SSH key from a server to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy sshkey remote <P-1> nvm

nvm: Copy the SSH key from a server to non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

75.2.2 copy sshkey envm

Copy the SSH key from external non-volatile memory to the specified destination.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** copy sshkey envm <P-1> nvm

nvm: Copy the SSH key from external non-volatile memory to non-volatile memory.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.

75.3 show

Display device options and settings.

75.3.1 show ssh

Display the SSH server and client information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show ssh

76 Storm Control

76.1 storm-control

Configure the global storm-control settings.

76.1.1 storm-control flow-control

Enable or disable flow control globally.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: storm-control flow-control
-
- no storm-control flow-control
Disable the option
 - ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no storm-control flow-control

76.2 traffic-shape

Traffic shape commands.

76.2.1 traffic-shape bw

Set threshold value

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: traffic-shape bw <P-1>

Parameter	Value	Meaning
P-1	0..100	Enter a number in the given range.

76.3 mtu

76.3.1 mtu

Set the MTU size (without VLAN tag size, because the VLAN tag is ignored for size calculation).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mtu <P-1>

Parameter	Value	Meaning
P-1	1518..12288	Enter a number in the given range.

76.4 mtu

76.4.1 mtu

Set the MTU size (without VLAN tag size, because the VLAN tag is ignored for size calculation).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mtu <P-1>

Parameter	Value	Meaning
P-1	1518..1530	Enter a number in the given range.

76.5 mtu

76.5.1 mtu

Set the MTU size (without VLAN tag size, because the VLAN tag is ignored for size calculation).

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mtu <P-1>

Parameter	Value	Meaning
P-1	1518..12288	Enter a number in the given range.

76.6 storm-control

Storm control commands

76.6.1 storm-control flow-control

Enable or disable flow control (802.3x) for this port.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control flow-control

- no storm-control flow-control
Disable the option
 - ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no storm-control flow-control

76.6.2 storm-control ingress unit

Set unit.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress unit <P-1>

Parameter	Value	Meaning
P-1	percent	Metering unit expressed in percentage of bandwidth.
	pps	Metering unit expressed in packets per second.

76.6.3 storm-control ingress unicast operation

Enable/disable ingress storm control for unicast frames with unknown destination.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress unicast operation

- no storm-control ingress unicast operation
Disable the option
 - ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no storm-control ingress unicast operation

76.6.4 storm-control ingress unknown-frames operation

Enable/disable ingress storm control for frames with unknown destination.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress unknown-frames operation

■ no storm-control ingress unknown-frames operation

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no storm-control ingress unknown-frames operation

76.6.5 storm-control ingress unknown-frames threshold

Set the threshold value for frames with unknown destination.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress unknown-frames threshold <P-1>

Parameter	Value	Meaning
P-1	0..14880000	Enter a number in the given range. If the configured unit is percent enter a number in (0..100) range.

76.6.6 storm-control ingress multicast operation

Enable/disable ingress storm control for multicast frames.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress multicast operation

■ no storm-control ingress multicast operation

Disable the option

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no storm-control ingress multicast operation

76.6.7 storm-control ingress multicast threshold

Set the threshold for multicast frames with known destination.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress multicast threshold <P-1>

Parameter	Value	Meaning
P-1	0..14880000	Enter a number in the given range. If the configured unit is percent enter a number in (0..100) range.

76.6.8 storm-control ingress broadcast operation

Enable/disable ingress storm control for broadcast frames.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** storm-control ingress broadcast operation
- no storm-control ingress broadcast operation
Disable the option
- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no storm-control ingress broadcast operation

76.6.9 storm-control ingress broadcast threshold

Set the threshold value for broadcast frames.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** storm-control ingress broadcast threshold <P-1>

Parameter	Value	Meaning
P-1	0..14880000	Enter a number in the given range. If the configured unit is percent enter a number in (0..100) range.

76.7 show

Display device options and settings.

76.7.1 show storm-control flow-control

Global flow control status.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show storm-control flow-control

76.7.2 show storm-control ingress

Display the storm control ingress parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show storm-control ingress [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

76.7.3 show traffic-shape

Display the traffic shape parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show traffic-shape

76.7.4 show mtu

Display the MTU parameters.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mtu

77 System

77.1 system

Set system related values e.g. name of the device, location of the device, contact data for the person responsible for the device, and pre-login banner text.

77.1.1 system name

Edit the name of the device. The system name consists of an alphanumeric ASCII character string with 0..255 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system name <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

77.1.2 system location

Edit the location of the device. The system location consists of an alphanumeric ASCII character string with 0..255 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system location <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

77.1.3 system contact

Edit the contact information for the person responsible for the device. The contact data consists of an alphanumeric ASCII character string with 0..255 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system contact <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

77.1.4 system pre-login-banner operation

Enable or disable the pre-login banner. You use the pre-login banner to display a greeting or information to users before they login to the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: system pre-login-banner operation

■ no system pre-login-banner operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no system pre-login-banner operation

77.1.5 system pre-login-banner text

Edit the text for the pre-login banner (C printf format syntax allowed: \\n\\t)
The device allows you to edit an alphanumeric ASCII character string with up to 512 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: system pre-login-banner text <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 512 characters (allowed characters are from ASCII 32 to 127).

77.1.6 system resources operation

Enable or disable the measurement operation.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system resources operation

■ no system resources operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no system resources operation

77.2 temperature

Configure the upper and lower temperature limits of the device. The device allows you to set the threshold as an integer from -99 through 99. You configure the temperatures in degrees Celsius.

77.2.1 temperature upper-limit

Configure the upper temperature limit.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: temperature upper-limit <P-1>

Parameter	Value	Meaning
P-1	-99..99	Upper temperature threshold ([C], default 70).

77.2.2 temperature lower-limit

Configure the lower temperature limit.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: temperature lower-limit <P-1>

Parameter	Value	Meaning
P-1	-99..99	Lower temperature threshold ([C], default 0).

77.3 show

Display device options and settings.

77.3.1 show eventlog

Display the event log notice and warning entries with time stamp.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show eventlog

77.3.2 show system info

Display the system related information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system info

77.3.3 show system pre-login-banner

Display the pre-login banner status and text.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system pre-login-banner

77.3.4 show system flash-status

Display the flash memory statistics of the device.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system flash-status

77.3.5 show system temperature limits

Display the temperature limits.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system temperature limits

77.3.6 show system temperature extremes

Display the minimum and maximum recorded temperature.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system temperature extremes

77.3.7 show system temperature histogram

Display the temperature histogram of the device.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system temperature histogram

77.3.8 show system temperature counters

Display number of 20 centigrade C variations in maximum one hour period.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show system temperature counters

77.3.9 show system resources

Display the system resources information (CPU utilization, memory and network CPU utilization).

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show system resources

78 Telnet

78.1 telnet

Set Telnet parameters.

78.1.1 telnet server

Enable or disable the telnet server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: telnet server

■ no telnet server

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no telnet server

78.1.2 telnet timeout

Set the idle timeout for a telnet connection in minutes.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: telnet timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Idle timeout of a session in minutes (default: 5).

78.1.3 telnet port

Set the listening port for the telnet server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: telnet port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Set the listening port for the telnet server.

78.1.4 telnet max-sessions

Set the maximum number of sessions for the telnet server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: telnet max-sessions <P-1>

Parameter	Value	Meaning
P-1	1..5	Set the maximum number of connections for the telnet server.

78.2 telnet

78.2.1 telnet

Establish a telnet connection to a remote host.

- ▶ Mode: "User Mode" and "Privileged Exec Mode"
- ▶ Privilege Level: Guest
- ▶ Format: telnet <P-1> [<P-2>] [<P-3>] [<P-4>] [<P-5>]

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..65535	Enter port number between 1 and 65535
P-3	debug	Display the current Telnet options.
P-4	line	Set the outbound Telnet operational mode as line mode (only takes effect for the serial connection).
P-5	echo	Enable local echo (only takes effect for the serial connection).

78.3 show

Display device options and settings.

78.3.1 show telnet

Display the telnet server information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show telnet

79 Traps

79.1 snmp

Configure of SNMP versions and traps.

79.1.1 snmp trap operation

Global enable/disable SNMP trap.

- ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** snmp trap operation
- no snmp trap operation
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** no snmp trap operation

79.1.2 snmp trap mode

Enable/disable SNMP trap entry.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** snmp trap mode <P-1>

Parameter	Value	Meaning
P-1	string	<name> Trap name (1 to 32 characters)

- no snmp trap mode
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Administrator
 - ▶ **Format:** no snmp trap mode <P-1>

79.1.3 snmp trap delete

Delete SNMP trap entry.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** snmp trap delete <P-1>

Parameter	Value	Meaning
P-1	string	<name> Trap name (1 to 32 characters)

79.1.4 snmp trap add

Add SNMP trap entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp trap add <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<name> Trap name (1 to 32 characters)
P-2	a.b.c.d	a.b.c.d Single IPv4 address.
	a.b.c.d:n	a.b.c.d:n IPv4 address with port.
	[0-9a-fA-F:]	[a:b:c:d:e:f:g:h] Single IPv6 address.
	0-9a-fA-F:]n	[a:b:c:d:e:f:g:h]:n IPv6 address with port.

79.2 show

Display device options and settings.

79.2.1 show snmp traps

Display the SNMP traps.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show snmp traps

80 Time Sensitive Networks (TSN)

80.1 tsn

Configure TSN (Time Sensitive Network) settings.

80.1.1 tsn operation

Enable or disable TSN.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** tsn operation

■ no tsn operation

Disable the option

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** no tsn operation

80.1.2 tsn base-time

Configure the base-time.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** tsn base-time <P-1>

Parameter	Value	Meaning
P-1	time	Enter the base time in the given format YYYY-MM-DD, hh:mm:ss.ns.

80.1.3 tsn cycle-time

Configure the cycle-time in nanoseconds.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** tsn cycle-time <P-1>

Parameter	Value	Meaning
P-1	50000..10000000	Enter the cycle time in nanoseconds.

80.2 tsn

Configure TSN (Time Sensitive Network) settings for interfaces.

80.2.1 tsn sdu traffic-class

Specify the traffic class for the SDU.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `tsn sdu traffic-class <P-1> max-sdu <P-2>`

max-sdu: Enter the maximum size of the SDU (service data unit). A value of 0 is interpreted as the maximum SDU size supported by the underlying MAC. The SDU includes the packet payload but excludes the source and destination MAC addresses (6 bytes each), the VLAN tag (4 bytes) and the FCS (4 bytes). Example for a 64 bytes Ethernet packet: 64 bytes - 12 bytes (MAC) - 4 bytes (VLAN) - 4 bytes (FCS) = 44 bytes (SDU).

Parameter	Value	Meaning
P-1	0..7	Enter the Traffic Class value.
P-2	xxx_hmcliList_max_s du	???

80.2.2 tsn gates operation

Enable or disable the GCL (gate control list) for TSN. If disabled the default gate states will apply.

- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** `tsn gates operation`
- **no tsn gates operation**
Disable the option
- ▶ **Mode:** Interface Range Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** `no tsn gates operation`

80.2.3 tsn commit

Commit the configured values to be active as current values. If the time gates set to enabled and the base time is in the past the cycle will be started. Otherwise the cycle start will be done when base time is reached.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `tsn commit`

80.2.4 tsn base-time

Configure the base-time.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `tsn base-time <P-1>`

Parameter	Value	Meaning
P-1	time	Enter the base time in the given format YYYY-MM-DD,hh:mm:ss.ns.

80.2.5 tsn default-gate-states

Configure the default gate states. They will be active in case of time gates will be disabled.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `tsn default-gate-states <P-1>`

Parameter	Value	Meaning
P-1	gate states	Enter gate state or gate states as comma separated values eg, 1,4,5.
	none	Reset gate states.

80.2.6 tsn cycle-time

Configure the cycle-time in nanoseconds.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `tsn cycle-time <P-1>`

Parameter	Value	Meaning
P-1	1000..1000000000	Enter the cycle time in nanoseconds.

80.2.7 tsn gcl add

Create GCL entry.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `tsn gcl add [id <P-1>] [gate-states <P-2>] [interval <P-3>]`

[id]: Index of the GCL entry that shall be inserted.

[gate-states]: Set gate states of GCL entry.

[interval]: Set interval [ns] of GCL entry.

Parameter	Value	Meaning
P-1	1..150	GCL entry ID.

Parameter	Value	Meaning
P-2	gate states	Enter gate state or gate states as comma separated values eg, 1,4,5.
	none	Reset gate states.
P-3	80..1000000000	Enter the interval in nanoseconds.

80.2.8 tsn gcl template

Choose one of the pre-defined templates for GCL.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `tsn gcl template <P-1>`

Parameter	Value	Meaning
P-1	default-2-time-slots	Template with 3 entries. First entry is the traffic class 7. Second entry is the traffic class 6 to 0. Third entry is a guard band.
	default-3-time-slots	Template with 5 entries. First entry is the traffic class 7. Second entry is a guard band. Third entry is the traffic class 6. Fourth entry is the traffic class 5 to 0. Fifth entry is a guard band.
	gb-tc7-tc6to0	Template with 3 entries. First entry is a guard band. Second entry is the traffic class 7. Third entry is the traffic class 6 to 0.
	tc6to0-gb-tc7	Template with 3 entries. First entry is the traffic class 6 to 0. Second entry is a guard band. Third entry is the traffic class 7.
	gb-tc7-gb-tc6-tc5to0	Template with 5 entries. First entry is a guard band. Second entry is the traffic class 7. Third entry is a guard band. Fourth entry is the traffic class 6. Fifth entry is the traffic class 5 to 0.
	tc5to0-gb-tc7-gb-tc6	Template with 5 entries. First entry is the traffic class 5 to 0. Second entry is a guard band. Third entry is the traffic class 7. Fourth entry is a guard band. Fifth entry is the traffic class 6.
	gb-tc6-gb-tc7-tc5to0	Template with 5 entries. First entry is a guard band. Second entry is the traffic class 6. Third entry is a guard band. Fourth entry is the traffic class 7. Fifth entry is the traffic class 5 to 0.
	gb-tc7-tc5to0-gb-tc6	Template with 5 entries. First entry is a guard band. Second entry is the traffic class 7. Third entry is the traffic class 5 to 0. Fourth entry is a guard band. Fifth entry is the traffic class 6.

80.2.9 tsn gcl modify

Modify GCL entry.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `tsn gcl modify <P-1> <P-2> interval <P-3> <P-4> gate-states <P-5>`

`interval`: Modify interval [ns] of GCL entry.

`gate-states`: Modify gate states of GCL entry.

Parameter	Value	Meaning
P-1	1..150	GCL entry ID.
P-2	1..5	GCL entry ID.
P-3	80..1000000000	Enter the interval in nanoseconds.
P-4	1000..10000000	Enter the interval in nanoseconds.
P-5	gate states	Enter gate state or gate states as comma separated values eg, 1,4,5.
	none	Reset gate states.

80.2.10 tsn gcl delete

Delete specified GCL entry.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** `tsn gcl delete <P-1>`

Parameter	Value	Meaning
P-1	1..150	GCL entry ID.
	all	Delete all GCL entries.

80.3 show

Display device options and settings.

80.3.1 show tsn global

Display the TSN global settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** `show tsn global`

80.3.2 show tsn sdu

Display the SDU settings for each traffic class and port.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show tsn sdu [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

80.3.3 show tsn gcl

Display the configured and current GCL (gate control list) for the port.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show tsn gcl [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

80.3.4 show tsn configuration

Display the configured and current preferences for TSN.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show tsn configuration

81 User Management

81.1 show

Display device options and settings.

81.1.1 show custom-role global

Display the common information of custom role.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show custom-role global [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

81.1.2 show custom-role commands

Display the included and excluded commands.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show custom-role commands [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

82 Users

82.1 users

Manage Users and User Accounts.

82.1.1 users add

Add a new user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users add <P-1>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

82.1.2 users delete

Delete an existing user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users delete <P-1>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

82.1.3 users enable

Enable user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users enable <P-1>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

82.1.4 users disable

Disable user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users disable <P-1>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

82.1.5 users password

Change user password.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users password <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	string	Enter a user-defined text, max. 64 characters.

82.1.6 users snmpv3 authentication

Specify authentication setting for a user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users snmpv3 authentication <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	md5	MD5 as SNMPv3 user authentication mode.
	sha1	SHA1 as SNMPv3 user authentication mode.

82.1.7 users snmpv3 encryption

Specify encryption settings for a user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users snmpv3 encryption <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	none	SNMPv3 encryption method is none.
	des	DES as SNMPv3 encryption method.
	aescfb128	AES-128 as SNMPv3 encryption method.

82.1.8 users snmpv3 password encryption

Change the SNMPv3 encryption password.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users snmpv3 password encryption <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	string	Enter a user-defined text, max. 64 characters.

82.1.9 users snmpv3 password authentication

Change the SNMPv3 authentication password.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users snmpv3 password authentication <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	string	Enter a user-defined text, max. 64 characters.

82.1.10 users access-role

Specify snmpv3 access role for a user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users access-role <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	slot no./port no.	

82.1.11 users lock-status

Set the lockout status of a specified user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users lock-status <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	unlock	Unlock specific user. User can login again.

82.1.12 users password-policy-check

Set password policy check option. The device checks the "minimum password length", regardless of the setting for this option.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** users password-policy-check <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	enable	Enable the option.
	disable	Disable the option.

82.2 show

Display device options and settings.

82.2.1 show users

Display the users and user accounts information.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** show users

83 Virtual LAN (VLAN)

83.1 name

83.1.1 name

Assign a name to a VLAN

- ▶ **Mode:** VLAN Database Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** name <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Enter a user-defined text, max. 32 characters.

83.2 vlan-unaware-mode

83.2.1 vlan-unaware-mode

Enable or disable VLAN unaware mode.

- ▶ **Mode:** VLAN Database Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** vlan-unaware-mode
- no vlan-unaware-mode
Disable the option
- ▶ **Mode:** VLAN Database Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no vlan-unaware-mode

83.3 vlan

Creation and configuration of VLANS.

83.3.1 vlan add

Create a VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan add <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.3.2 vlan delete

Delete a VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan delete <P-1>

Parameter	Value	Meaning
P-1	2..4042	Enter VLAN ID. VLAN ID 1 can not be deleted or created

83.4 vlan

Configure 802.1Q port parameters for VLANs.

83.4.1 vlan acceptframe

Configure how to handle tagged/untagged frames received.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan acceptframe <P-1>

Parameter	Value	Meaning
P-1	all	Untagged frames or priority frames received on this interface are accepted and assigned the value of the interface VLAN ID for this port.
	vlanonly	Only frames received with a VLAN tag will be forwarded. All other frames will be dropped.

83.4.2 vlan ingressfilter

Enable/Disable application of Ingress Filtering Rules.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan ingressfilter

■ no vlan ingressfilter

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no vlan ingressfilter

83.4.3 vlan priority

Configure the priority for untagged frames.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan priority <P-1>

Parameter	Value	Meaning
P-1	0..7	Enter a number in the given range.

83.4.4 vlan pvid

Configure the VLAN id for a specific port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan pvid <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.4.5 vlan tagging

Enable or disable tagging for a specific VLAN port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan tagging <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

- no vlan tagging
 - Disable the option
 - ▶ Mode: Interface Range Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: no vlan tagging <P-1>

83.4.6 vlan participation include

vlan participation to include

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan participation include <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.4.7 vlan participation exclude

vlan participation to exclude

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan participation exclude <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.4.8 vlan participation auto

vlan participation to auto

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan participation auto <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.5 show

Display device options and settings.

83.5.1 show vlan id

Display the configuration of a single specified VLAN.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show vlan id <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.5.2 show vlan brief

Display the general VLAN parameters.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show vlan brief

83.5.3 show vlan port

Display the VLAN configuration of a single port.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show vlan port [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	

83.5.4 show vlan member current

Display the membership of ports in static VLAN or dynamically created.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show vlan member current

83.5.5 show vlan member static

Display the membership of ports in static VLAN.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** show vlan member static

83.6 network

Configure the inband and outband connectivity.

83.6.1 network management vlan

Configure the management VLAN ID of the switch.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network management vlan <P-1>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.

83.6.2 network management priority dot1p

Configure the management VLAN priority of the switch.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network management priority dot1p <P-1>

Parameter	Value	Meaning
P-1	0..7	Enter a number in the given range.

83.6.3 network management priority ip-dscp

Configure the management VLAN ip-dscp priority of the switch.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network management priority ip-dscp <P-1>

Parameter	Value	Meaning
P-1	0..63	Enter a number in the given range.

84 Voice VLAN

84.1 voice

Configure voice VLAN.

84.1.1 voice vlan

Enable or disable the voice VLAN feature.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** voice vlan

- **no voice vlan**
Disable the option
 - ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** no voice vlan

84.2 voice

Configure voice VLAN.

84.2.1 voice vlan vlan-id

Set and configure the vlan-id interface mode.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** voice vlan vlan-id <P-1> [dot1p <P-2>]
[dot1p]: Set and configure the vlan id and dot1p interface mode.

Parameter	Value	Meaning
P-1	0..4042	Enter the VLAN ID. Entering of ID 0 disables the feature.

Parameter	Value	Meaning
P-2	0	priority 0
	1	priority 1
	2	priority 2
	3	priority 3
	4	priority 4
	5	priority 5
	6	priority 6
	7	priority 7
	255	default

84.2.2 voice vlan dot1p

Set and configure the dot1p voice vlan interface mode.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan dot1p <P-1>

Parameter	Value	Meaning
P-1	0	priority 0
	1	priority 1
	2	priority 2
	3	priority 3
	4	priority 4
	5	priority 5
	6	priority 6
	7	priority 7
	255	default

84.2.3 voice vlan dscp

Set and configure the Differentiated Services Code Point value.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan dscp <P-1>

Parameter	Value	Meaning
P-1	<0..63>	Differentiated Services Code Point value.
	af11	Match packets with AF11 dscp.
	af12	Match packets with AF12 dscp.
	af13	Match packets with AF13 dscp.
	af21	Match packets with AF21 dscp.
	af22	Match packets with AF22 dscp.
	af23	Match packets with AF23 dscp.
	af31	Match packets with AF31 dscp.
	af32	Match packets with AF32 dscp.
	af33	Match packets with AF33 dscp.
	af41	Match packets with AF41 dscp.
	af42	Match packets with AF42 dscp.
	af43	Match packets with AF43 dscp.
	cs1	Match packets with CS1 dscp.
	cs2	Match packets with CS2 dscp.
	cs3	Match packets with CS3 dscp.
	cs4	Match packets with CS4 dscp.
	cs5	Match packets with CS5 dscp.
	cs6	Match packets with CS6 dscp.
	cs7	Match packets with CS7 dscp.
	default	Match packets with default dscp.
	ef	Match packets with EF dscp.

84.2.4 voice vlan none

Configure the none voice VLAN interface mode.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan none

84.2.5 voice vlan untagged

Configure the untagged voice VLAN interface mode.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan untagged

84.2.6 voice vlan disable

Disable voice VLAN on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan disable

84.2.7 voice vlan auth

Set voice VLAN Authentication Mode on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan auth

■ no voice vlan auth

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no voice vlan auth

84.2.8 voice vlan data priority

Trust/Untrust data traffic on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: voice vlan data priority <P-1>

Parameter	Value	Meaning
P-1	trust	Trust data traffic on an interface.
	untrust	Untrust data traffic on an interface.

84.3 show

Display device options and settings.

84.3.1 show voice vlan global

Display the current global Voice VLAN admin mode.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show voice vlan global

84.3.2 show voice vlan interface

Display a summary of the current Voice VLAN configuration for a specific port or for all ports.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show voice vlan interface [<P-1>]

Parameter	Value	Meaning
P-1	slot no./port no.	
